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10-2 BODY

EXTERIOR

Doors

REMOVAL & INSTALLATION

♦ See Figures 1 and 2

➡ The following procedure requires the use of a door hinge spring compressor such as J-28625-A or equivalent.

1. If equipped with power door components, perform the following procedures:
 - a. Disconnect the negative battery cable.
 - b. On late model vehicles (all 1989-93 and some earlier models) check for access to the wiring by removing the cowl side vent cover. If access is possible, remove the receptacles from the wiring harness, then remove the retainer from the wiring harness grommet. Remove the rubber conduit from the door pillar by pushing it from the vent cover side.
 - c. If access is not possible, remove the door trim panel, then disengage the electrical harness connector from the power door lock motor and/or the power window regulator. Remove the harness from the door.
2. If available, apply cloth backed tape to the door and body pillar for protection.

***CAUTION

Before removing the hinge spring from the door, cover the spring with a towel to prevent the spring from flying and possibly causing personal injury.

3. Using a door hinge spring compressor such as No. J-28625-A or equivalent, compress the door hinge spring and remove it.
 4. To remove the door hinge pin clips, spread the clips and move them above the recess on the pin; when the pin is removed, the clip will ride on the pin and fall free of it.
 5. Using a soft-head hammer and a pair of locking pliers, remove the lower pin from the door hinge; then, temporarily install a bolt (in the lower pin hole) to hold the door in place until the upper hinge pin is removed.
 6. Remove the upper door hinge pin and support the door, then remove the bolt from the lower hinge pin hole and remove the door from the truck.
- To install:**
7. To install the door, position it on the hinges and insert a bolt through the lower hinge pin hole.
 8. Using a new hinge pin clip, install the upper hinge pin.
 9. Remove the bolt from the lower hinge pin hole. Using a new hinge pin, install it into the lower hinge pin holes.
 10. Compress the door hinge spring and install it into the door hinge using the door hinge spring compressor tool.

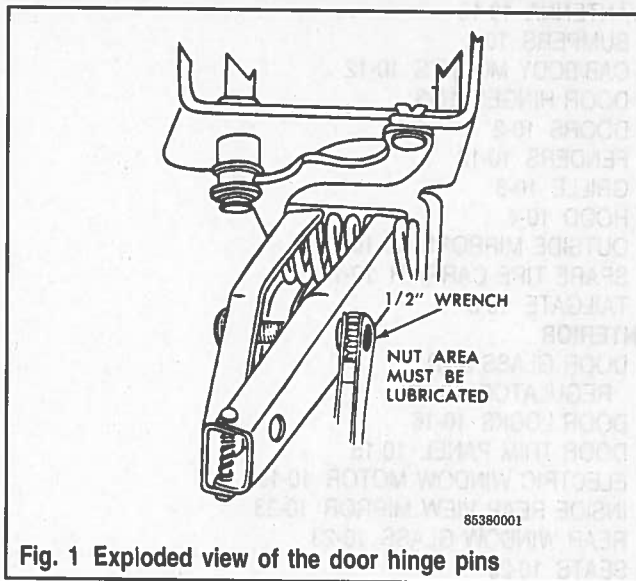


Fig. 1 Exploded view of the door hinge pins

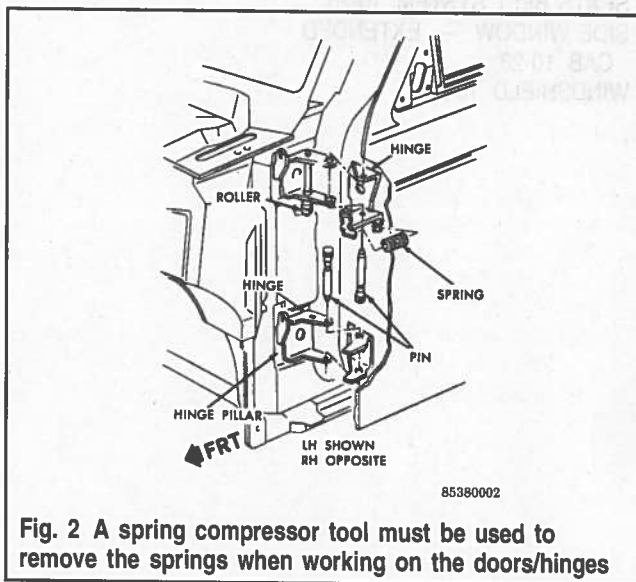


Fig. 2 A spring compressor tool must be used to remove the springs when working on the doors/hinges

11. If equipped with power door components, re-engage the wiring and install the trim panel or pieces, then connect the negative battery cable.

ADJUSTMENTS

Factory installed hinges are welded in place, so no adjustment of the system is necessary or recommended. Service replacement hinges are bolted in position and may be adjusted. If your vehicle is equipped with service replacement hinges, please refer to the door hinge adjustment procedure located later in this section.

Door Hinges

➔The following procedure requires the use of an $\frac{1}{8}$ in. (3mm) drill bit, $\frac{1}{2}$ in. (13mm) drill bit, a center punch, a cold chisel, a portable body grinder, a putty knife and a scribing tool. Because this procedure requires opening a pinch weld, access to a welder is advisable to properly finish installation.

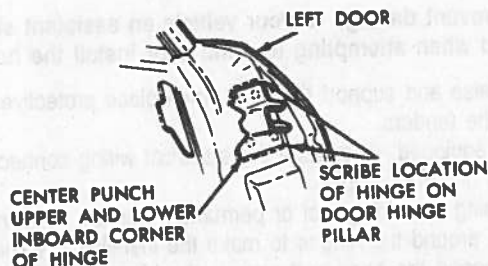
REMOVAL & INSTALLATION

♦ See Figures 3, 4, 5, 6 and 7

1. Remove the door, and place it on a padded workbench.
2. If necessary, use a putty knife to remove the sealant from the around the edge of the hinge.
3. Outline the position of the hinge(s) on the door and the body pillar using a scribing tool.
4. Center punch the hinge-to-door and the hinge-to-body pillar welds.
5. Drill a pilot hole through each weld using a $\frac{1}{8}$ in. (3mm) drill bit. Drill only enough to penetrate the hinge base plate.

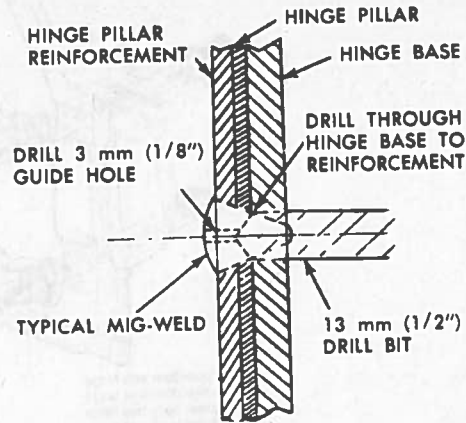
➔When drilling the holes through the hinge welds, **DO NOT** drill through the door or the body pillar.

6. Using a $\frac{1}{2}$ in. (13mm) bit, drill a hole through the hinge base, following the $\frac{1}{8}$ in. (3mm) pilot hole. Once again, only drill through the hinge base.
7. Use a cold chisel and a hammer to separate the hinge from the door and/or the body pillar.
8. If replacing the upper door hinge it may be necessary to remove the instrument panel attaching screws, then pull the panel outward and support.
9. Prepare the surface for the replacement hinge(s) using a file or a portable grinder. Clean off any welds remaining on the door or the body pillar.



85380003

Fig. 3 Marking the door hinges for replacement



85380004

Fig. 4 Use a drill to remove the door hinge welds

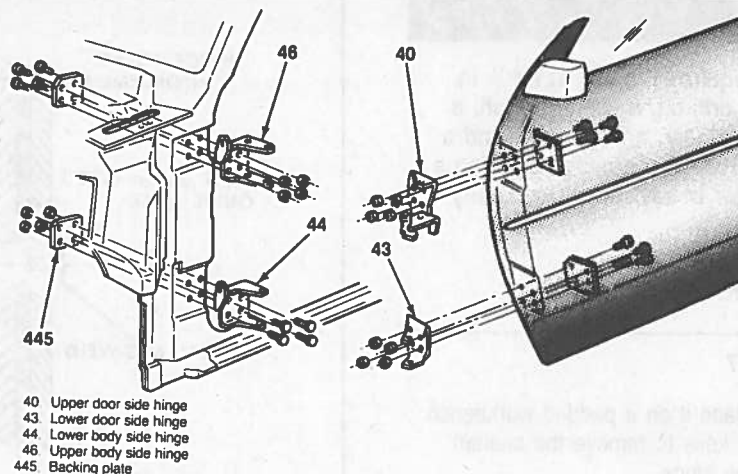
To install:

10. Align the bolt-on replacement hinge with the scribe lines made during removal.
11. Using the new hinge as a template, mark the location of each bolt hole using the center punch.
12. Drill holes (using the center marks as a guide) through the door and body pillar using a $\frac{1}{2}$ in. (13mm) drill bit.
13. Using a hammer and cold chisel, open the door pillar (body side) pinch weld sufficiently to install the tapped anchor plate.
14. Coat the surface of the hinge that mates to the pillar and door using a medium bodied sealer.
15. Install the hinge bolts and tapped backing plate by aligning the components with the holes in the hinge pillar and door. Place the bolts through the hinge, pillar and/or door and into the tapped backing plate. It is advisable to attach a wire to the instrument panel side of the front lower pillar tapped backing plate in order to aid in aligning the holes. Once the bolts are all threaded, tighten them evenly to 26 ft. lbs. (35 Nm).
16. Close the opening in the pinch weld and, if possible, spot weld to secure the flange.
17. Refinish and paint the door frame and/or pinch weld.
18. If the instrument panel was repositioned for access, pivot and secure the panel.
19. Install the door and properly adjust the new bolt-on hinges. For details, please refer to the hinge adjustment procedure found later in this section. Check the door-to-frame fit and that the striker properly engages the lock fork bolt.

ADJUSTMENT

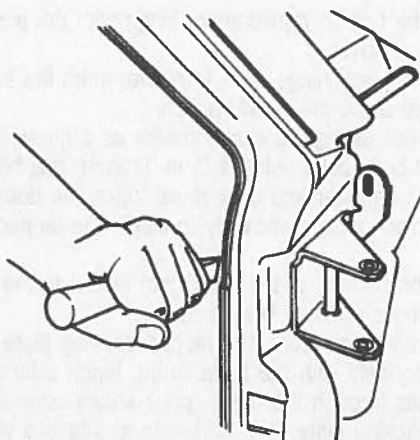
➔The $\frac{1}{2}$ in. (13mm) drill hinge holes with the service replacement bolt-on door hinges provide for some adjustment.

1. Loosen the striker and door hinge bolts, then adjust the door up, down, forward, rearward, in or out (as necessary) at the door hinges.



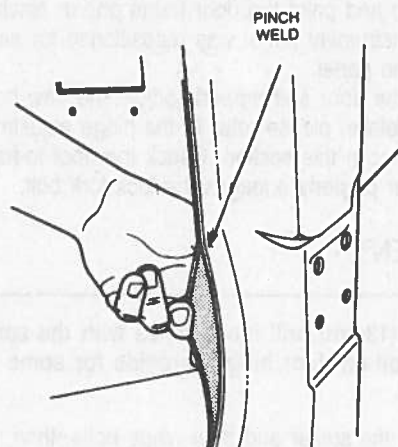
85380005

Fig. 5 Exploded view of the service replacement bolt-on hinges



85380006

Fig. 6 Using a cold chisel to open the door pillar pinch weld



85380007

Fig. 7 The door pillar must be opened sufficiently to install the tapped anchor plate

2. Hold the door in position (an assistant is helpful here) and tighten the hinge bolts slightly, then check the for the following specified gaps:

- Door-to-rocker panel — 0.21-0.27 in. (5-7mm)
- Door-to-roof panel — 0.21-0.27 in. (5-7mm)
- Rear of door-to-rear of pillar — 0.16-0.22 in. (4-6mm)
- Forward edge of door-to-front fender — 0.16-0.22 in.

(4-6mm)

- Door surface flush with other panels to within — 0.03 in. (1mm)

3. Make sure that the striker properly engages the lock fork bolt.

4. When all adjustments are complete, tighten the hinge bolts to 26 ft. lbs. (35 Nm), then tighten the striker bolts securely.

Hood

REMOVAL & INSTALLATION

♦ See Figures 8 and 9

➡ To prevent damage to your vehicle an assistant should be used when attempting to remove or install the hood.

1. Raise and support the hood, then place protective covers on the fenders.

2. If equipped, disengage the electrical wiring connector from the underhood light.

3. Using a scribing tool or permanent marker, matchmark the area around the hinges to make the installation easier.

4. Support the hood and remove the hinge-to-hood bolts.

5. Remove the hood from the truck.

6. Installation is the reverse of removal. Tighten the hood mounting securely, but do not exceed 18 ft. lbs. (25 Nm).

7. If necessary, adjust the hinges or the bump stops in order to achieve proper hood alignment.

Tailgate

REMOVAL & INSTALLATION

♦ See Figures 10, 11, 12 and 13

1. Lower and support the tailgate on a table, pair of saw-horses or an equivalent support. In fact, a willing friend will do here as well, and is usually better company than a table.
2. Remove the left and right-side tailgate-to-fender striker bolts.

➡ On most early model (and some late model) vehicles the striker does not have to be removed, the support link may be slotted for removal from the striker assembly. If so, the support link must usually be bent at the joint in the opposite way from normal extension/installation (normal motion when the tailgate is lowered or raised). In other words, pull up on the middle of the link while partially raising the tailgate. The larger portion of the retaining slot may then be slid over the head of the pivot and removed.

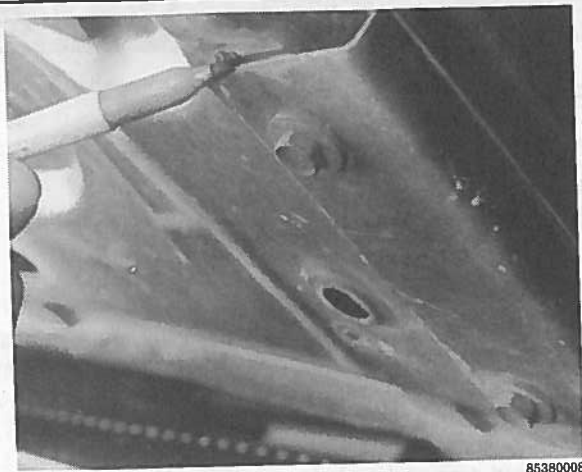
3. Remove the left and right-side tailgate side hinge bolts, then remove the tailgate from the truck.

4. To install, reverse the removal procedures. Torque the tailgate hinge bolts and the striker-to-fender bolts (as applicable) to 20 ft. lbs. (27 Nm).

5. Check for proper tailgate operation.

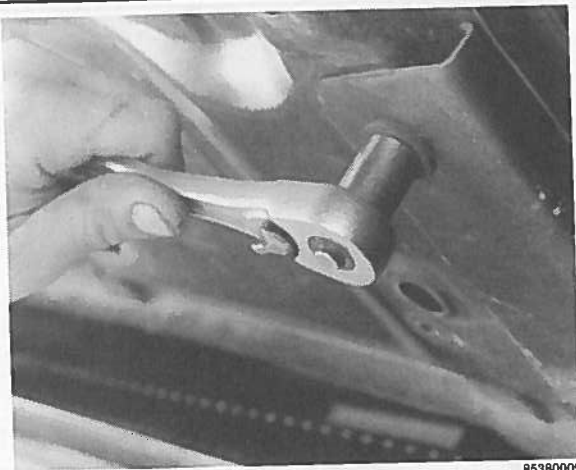
ALIGNMENT

Align the tailgate so the gaps between all of the components are equal; it must be flush with the fenders. Center the tailgate in the opening between the fenders by adjusting the hinges and/or the striker bolts.



85380008

Fig. 8 Matchmark the hood to the hinges in order to simplify installation



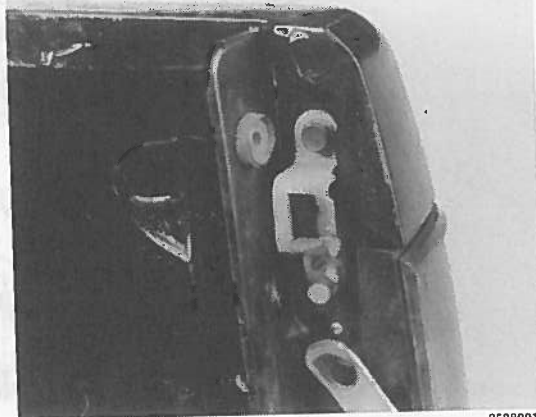
85380009

Fig. 9 Hold the hood securely while loosening the mounting bolts

ALIGNMENT

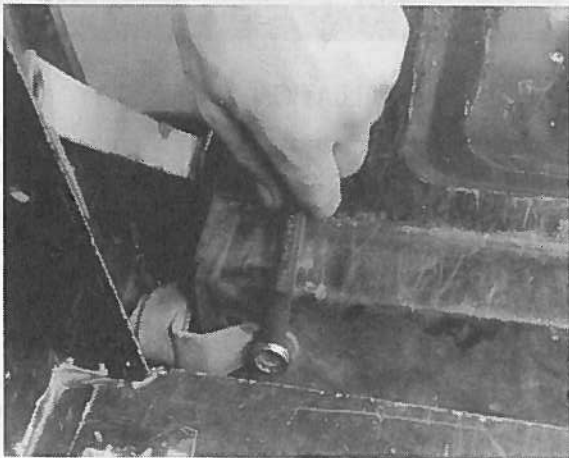
Align the hood so that the gaps between all of the components are equal; it must be flush with the fender and the cowl vent grille. Center the hood in the opening between the fenders, the cowl and the radiator grille. If it is difficult to center the hood or if the hood appears to be out of square, the front end sheet metal may need to be adjusted.

Most of the hood adjustment is achieved through the hinge-bolts, though on some vehicles adjustment may also be obtained through repositioning the striker and/or through the use of bump stops.



85380011

Fig. 10 Some early model tailgates may be disconnected from the striker without removing any retaining bolts



85380012

Fig. 11 Loosen and remove the hinge bolts, then remove the tailgate

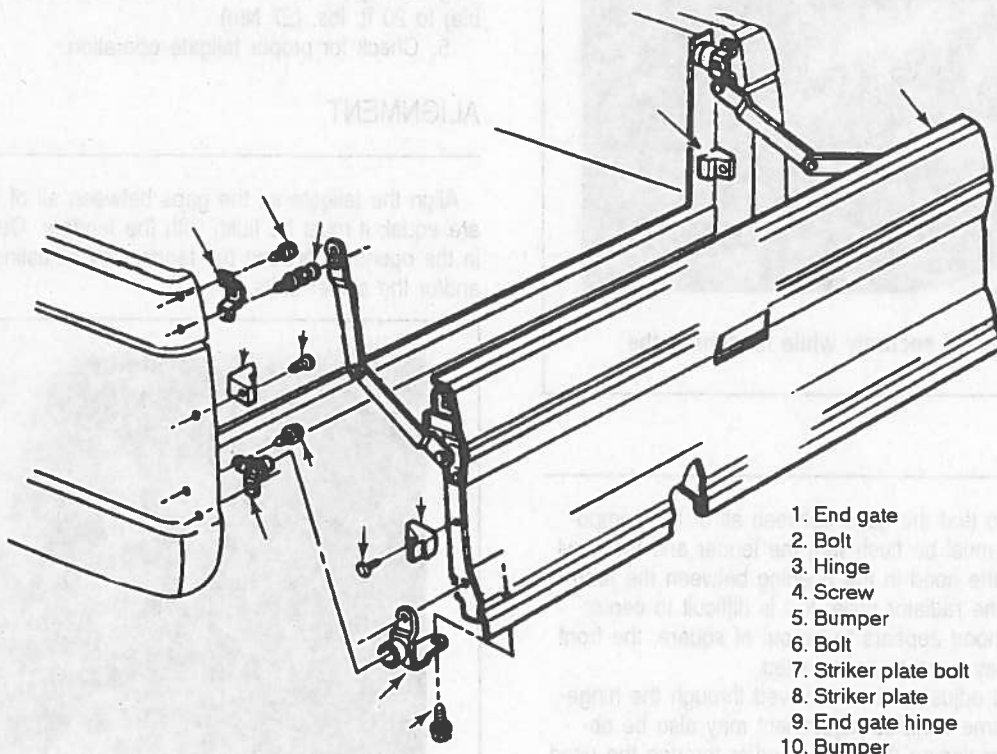
Bumpers

REMOVAL & INSTALLATION

Front

♦ See Figures 14, 15 and 16

1. If necessary for better access, raise and support the front of the vehicle safely.
2. If equipped, remove the air dam/deflector retainers and remove the air dam from the vehicle. On some models it may not be necessary to completely remove the air dam. It may be possible only to remove the center (bumper-to-air dam) and left (dam-to-fender or bumper depending on the application) retainers and support the air dam at the center.
3. Remove the brace to bumper nut(s) and bolt(s).
4. Disengage the parking lamp connectors and, if equipped, the fog lamp connectors.



1. End gate
2. Bolt
3. Hinge
4. Screw
5. Bumper
6. Bolt
7. Striker plate bolt
8. Striker plate
9. End gate hinge
10. Bumper

85380013

Fig. 12 Common early model tailgate and component mounting

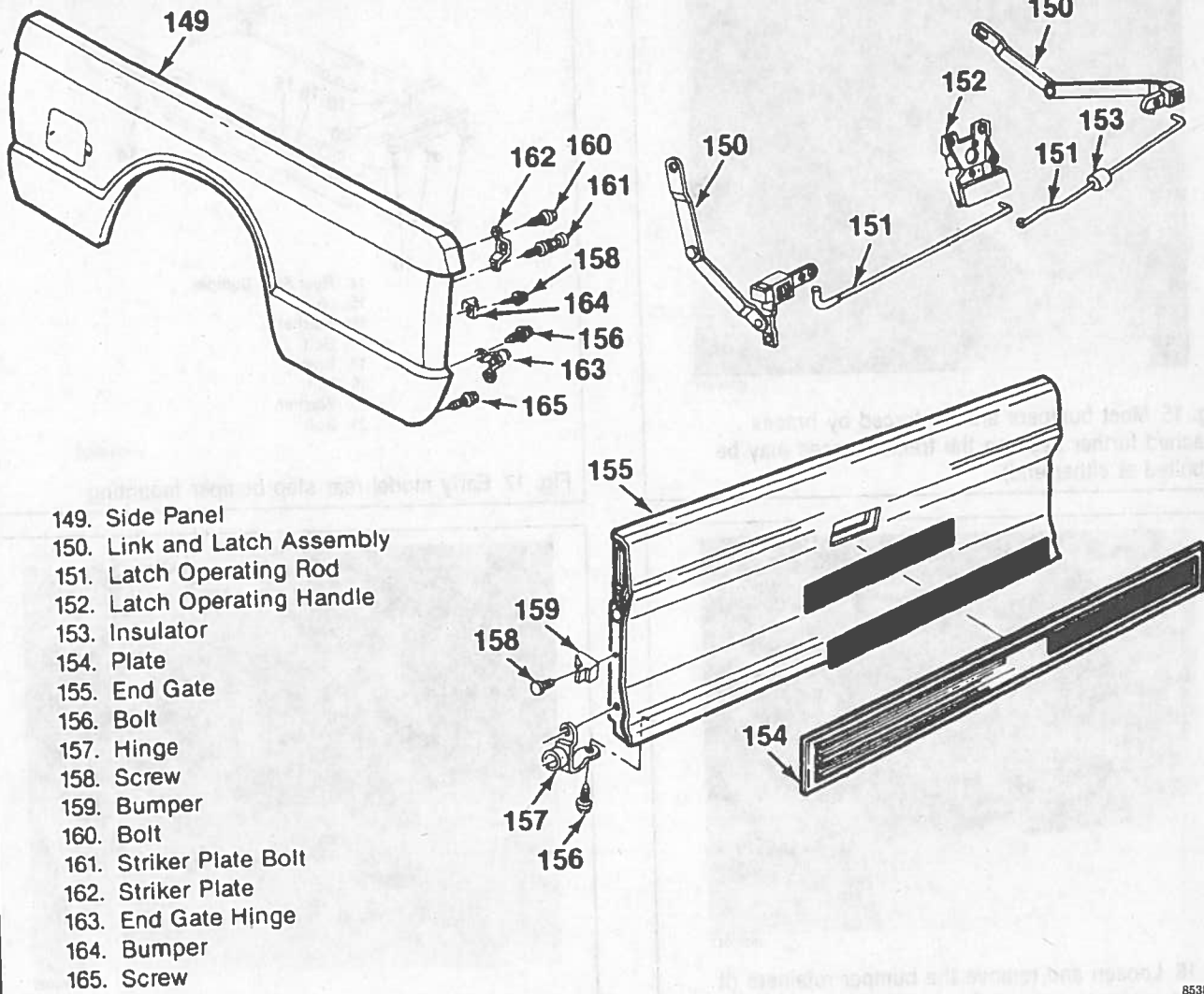


Fig. 13 Late model tailgate

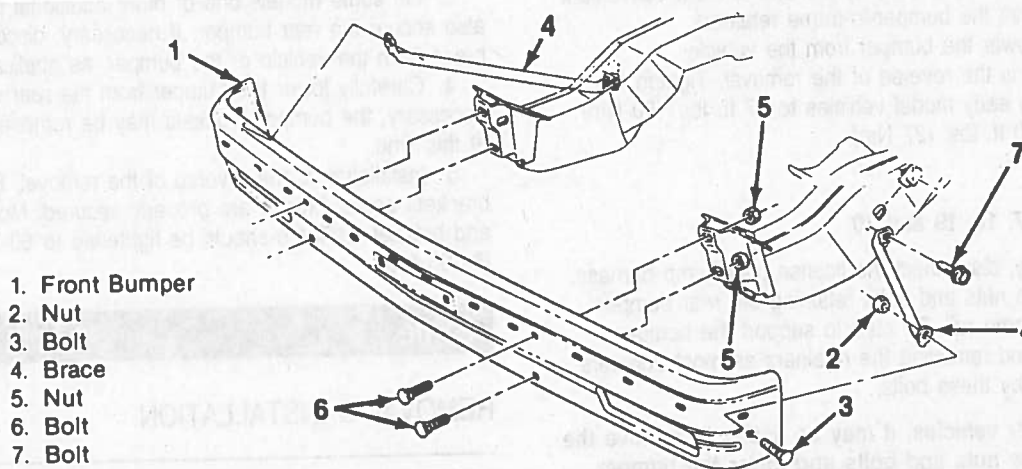
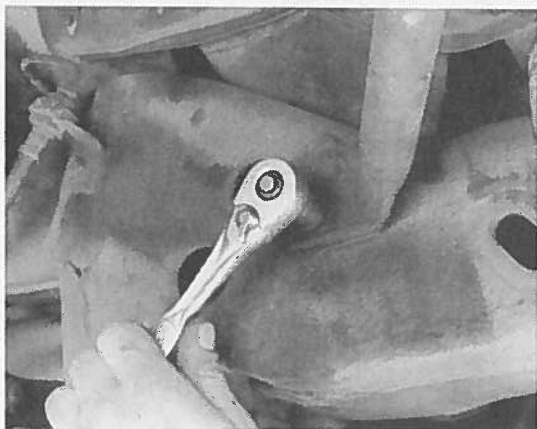
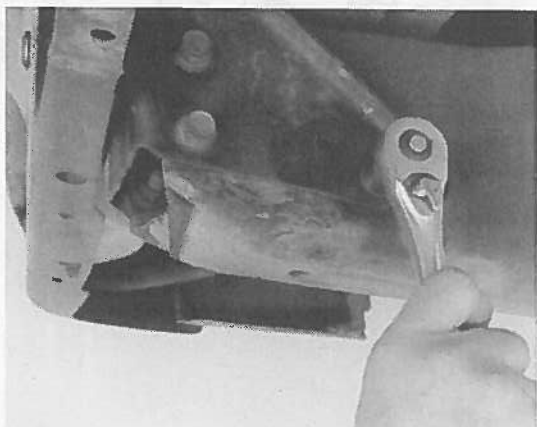


Fig. 14 Common early model front bumper mounting



85380016

Fig. 15 Most bumpers are reinforced by braces attached further back on the frame (braces may be unbolted at either end)



85380017

Fig. 16 Loosen and remove the bumper retainers (it may be easier to remove these than to remove the smooth capscrews on the face of older models)

5. Support the bumper (usually a friend is most convenient here), then remove the bumper-to-frame retainers.

6. Carefully lower the bumper from the vehicle

7. Installation is the reverse of the removal. Tighten the retaining bolts on early model vehicles to 37 ft. lbs. (50 Nm) and all nuts to 20 ft. lbs. (27 Nm).

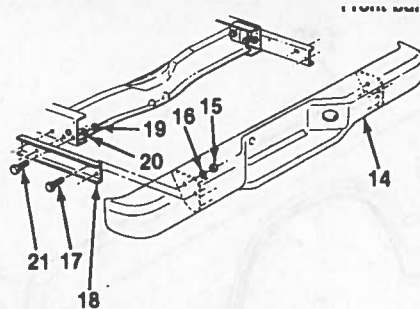
Rear

♦ See Figures 17, 18, 19 and 20

1. If necessary, disconnect the license plate lamp harness.

2. Remove the nuts and bolts retaining the rear bumper brackets to the frame rail. Be sure to support the bumper when loosening and removing the retainers as most bumpers are secured only by these bolts.

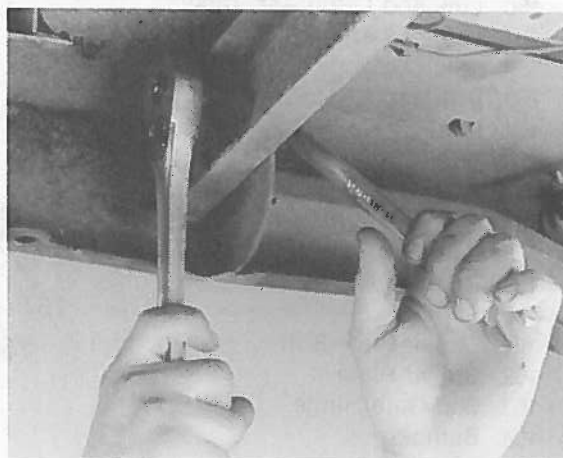
➡ On some newer vehicles, it may be easier to remove the bracket-to-bumper nuts and bolts and lower the bumper from the vehicle with the brackets still installed on frame. Check under the bumper to see how it is mounted, then make the decision based on ease of service.



- 14. Rear Step Bumper
- 15. Nut
- 16. Washer
- 17. Bolt
- 18. Brace
- 19. Nut
- 20. Washer
- 21. Bolt

85380021

Fig. 17 Early model rear step bumper mounting



85380022

Fig. 18 Most bumpers are easily removed once the bracket-to-frame retainers are removed

3. On some models one or more additional braces may also secure the rear bumper. If necessary, disconnect the brace from the vehicle or the bumper, as applicable.

4. Carefully lower the bumper from the rear of the truck. If necessary, the bumper brackets may be removed from bumper at this time.

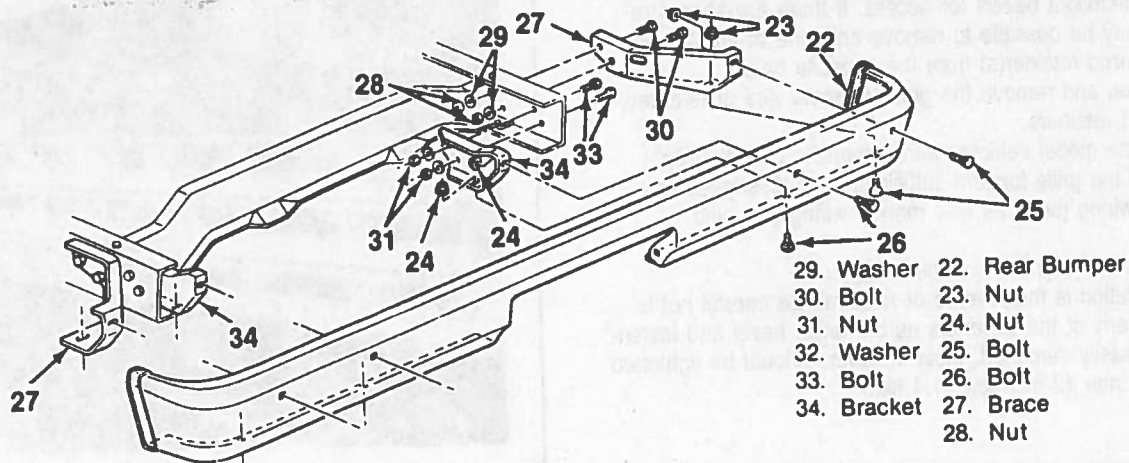
5. Installation is the reverse of the removal. Be sure all brackets and/or braces are properly secured. Most of the brace and bracket retainers should be tightened to 60-70 ft. lbs. (81-95 Nm).

Grille

REMOVAL & INSTALLATION

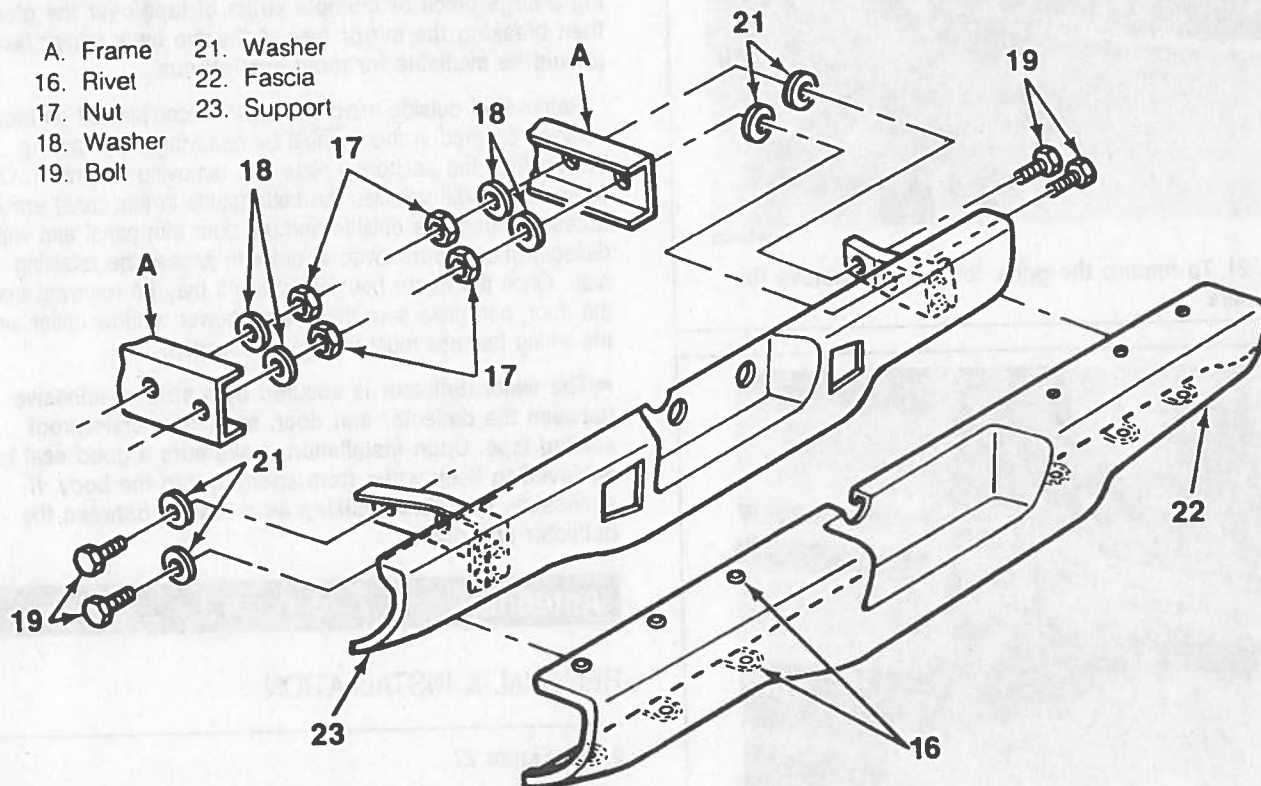
♦ See Figures 21, 22, 23 and 24

1. On early model vehicles with separate grille and head-light bezels, check the sides of the grille to see if any retainers



85380020

Fig. 19 Common early model standard bumper (non-step) mounting



85380023

Fig. 20 Exploded view of the rear step bumper mounting — MFI-Turbo

10-10 BODY

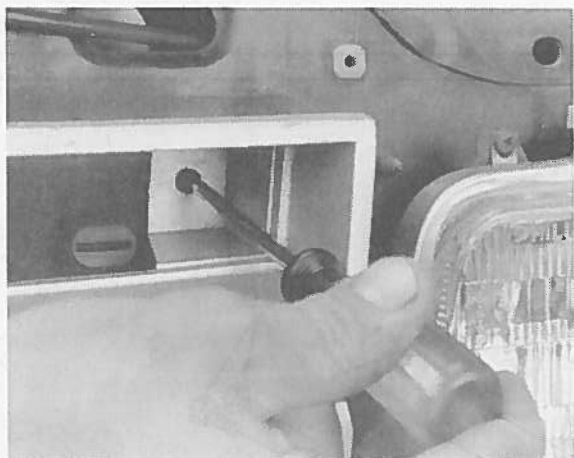
are hidden below or shared with the bezel. If necessary, remove the headlight bezels for access. If there are shared retainers it may be possible to remove only one of the bezels and the shared retainer(s) from the opposite bezel.

2. Loosen and remove the grille-to-fender and grille-to-radiator support retainers.

3. On late model vehicles with composite grille/headlight bezels, pull the grille forward sufficiently and disengage any necessary wiring (such as side marker wiring and bulb sockets).

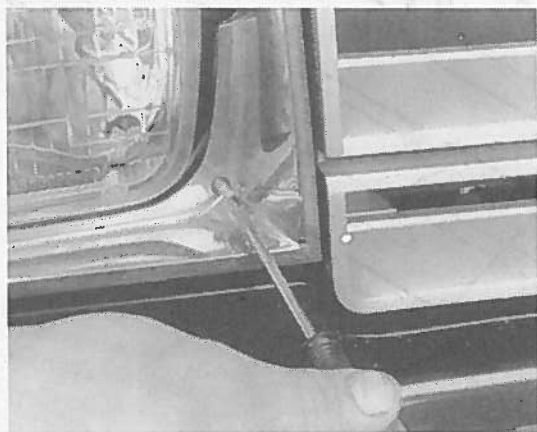
4. Remove the grille from the vehicle.

5. Installation is the reverse of removal. Be careful not to overtighten any of the fasteners as the grille, bezel and fasteners are all easily damaged. Most fasteners should be tightened to no more than 12 inch lbs. (1.4 Nm).



85380026

Fig. 21 To remove the grille, loosen and remove the retainers



85380027

Fig. 22 On some early models it may be necessary to remove the headlight bezels or shared bezel retainers for grille removal



85380028

Fig. 23 Once the retainers are removed, the grille may be separated from the radiator support

Outside Mirrors

♦ See Figures 25 and 26

➡ A damaged mirror glass face may be replaced by placing a large piece or multiple strips of tape over the glass then breaking the mirror face. Adhesive back mirror faces should be available for most applications.

Removal of outside mirrors is easily accomplished on most vehicles covered in this manual by removing the attaching screws from the anchoring plate and removing the mirror. On some late model vehicles the bolts (studs in this case) are not accessible from the outside and the door trim panel and water deflector must be removed in order to access the retaining nuts. Once the mirror housing is free it may be removed from the door, but make sure there is no power window option or the wiring harness must first be disengaged.

➡ The water deflector is secured by a strip of adhesive between the deflector and door, as well as waterproof sealing tape. Upon installation, make sure a good seal is achieved to keep water from entering into the body. If necessary, use strip caulking as a sealant between the deflector and door.

Antenna

REMOVAL & INSTALLATION

♦ See Figure 27

1. Disconnect the negative battery cable.
2. Remove the mast retaining nut, mast and bezel.
3. Disconnect the antenna cable from the receiver cable.
4. Remove the screw and star washer attaching the antenna to the fender.

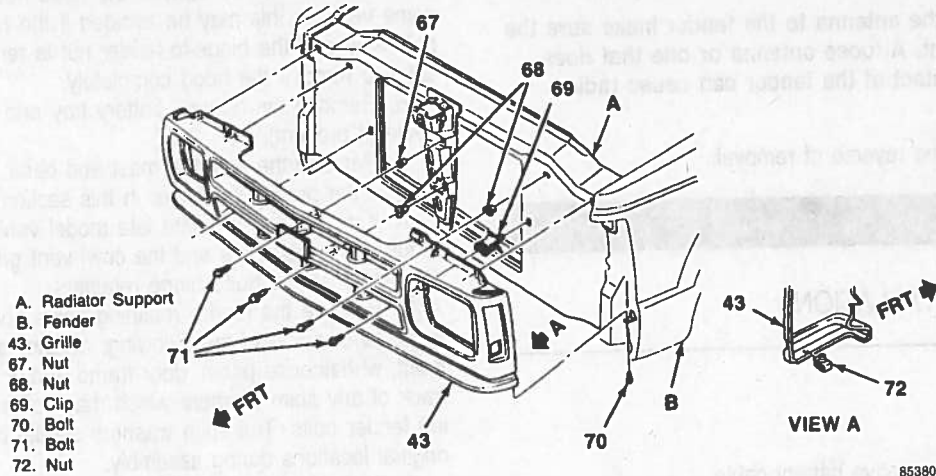


Fig. 24 Exploded view of a late model composite grille/headlight bezel assembly

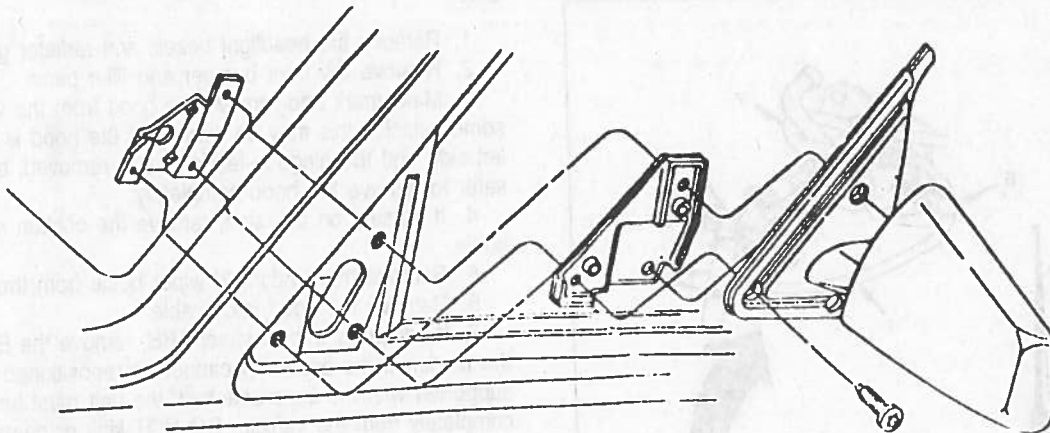


Fig. 25 Standard early model outside mirror

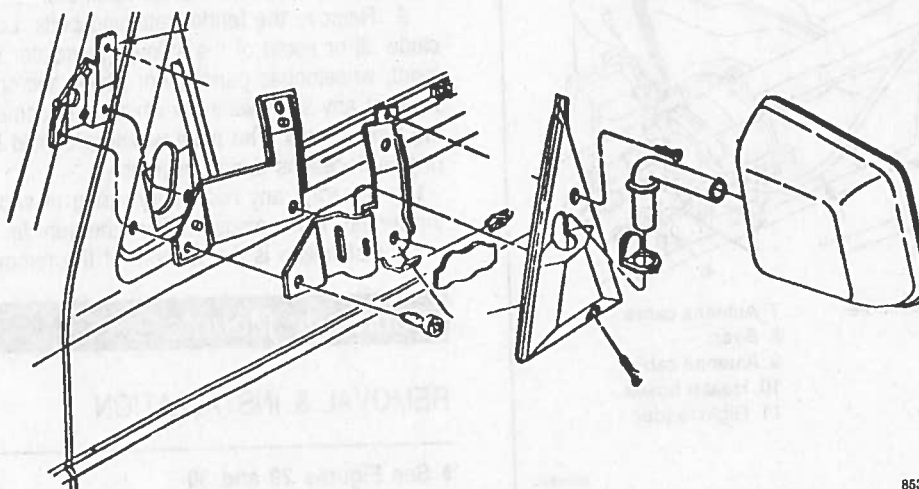


Fig. 26 Common fold-in type outside mirror

5. Remove the antenna.

➡When installing the antenna to the fender make sure the retaining nut is tight. A loose antenna or one that does not make good contact at the fender can cause radio interference.

6. Installation is the reverse of removal.

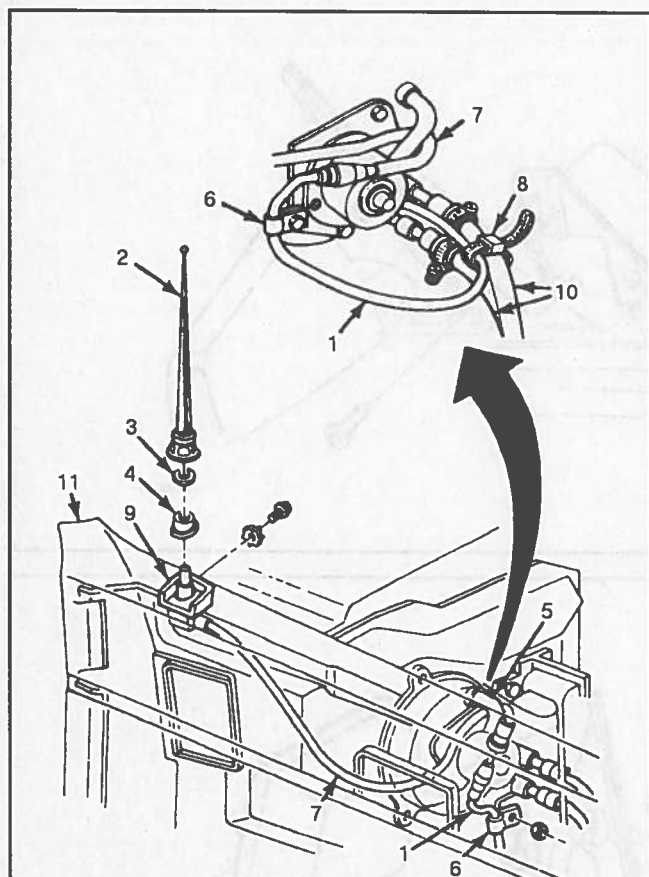
Fenders

REMOVAL & INSTALLATION

➤ See Figure 28

Right

1. Disconnect the negative battery cable.
2. Remove the headlight bezels and radiator grille.
3. Remove the front bumper and filler panel.



- | | |
|---------------------------|------------------|
| 1. Receiver antenna cable | 7. Antenna cable |
| 2. Antenna | 8. Strap |
| 3. Nut | 9. Antenna cable |
| 4. Bezel | 10. Heater hoses |
| 5. Heater vent pipe | 11. Right fender |
| 6. Clamp | |

85380033

Fig. 27 Common radio antenna mounting

4. Matchmark and remove the hood from the vehicle. On some vehicles this may be avoided if the hood is supported on right side and the hinge-to-fender nut is removed, but it is still safer to remove the hood completely.

5. Remove the battery, battery tray and radiator coolant bottle (if present).

6. Remove the antenna mast and base. For details, please refer to the procedure earlier in this section.

7. If necessary on some late model vehicles, remove the windshield wiper arms and the cowl vent grille for access to the fender and/or hood hinge retainers.

8. Remove the fender retaining bolts. Locations should include all or some of the following, radiator support, reinforcement, wheelhouse panel, door frame and/or door hinge. Keep track of any shim washers which may come lose after removing fender bolts. The shim washers should be installed in their original locations during assembly.

9. Separate any necessary wiring or vacuum hoses from the fender, then remove it from the vehicle.

10. Installation is the reverse of the removal.

Left

1. Remove the headlight bezels and radiator grille.

2. Remove the front bumper and filler panel.

3. Matchmark and remove the hood from the vehicle. On some vehicles this may be avoided if the hood is supported on left side and the hinge-to-fender nut is removed, but it is still safer to remove the hood completely.

4. If present on this side, remove the coolant reservoir bottle.

5. Remove the windshield wiper bottle from the fender.

6. Remove the hood latch cable.

7. If equipped with 4 wheel ABS, remove the EHC from the fender. If the assembly cannot be repositioned slightly and supported with the lines attached, the unit must be removed completely from the vehicle. DO NOT kink or damage the brake lines, brake failure and serious personal injury could result.

8. If necessary on some late model vehicles, remove the windshield wiper arms and the cowl vent grille for access to the fender and/or hood hinge retainers.

9. Remove the fender retaining bolts. Locations should include all or some of the following, radiator support, reinforcement, wheelhouse panel, door frame and/or door hinge. Keep track of any shim washers which may come lose after removing fender bolts. The shim washers should be installed in their original locations during assembly.

10. Separate any necessary wiring or vacuum hoses from the fender, then remove it from the vehicle.

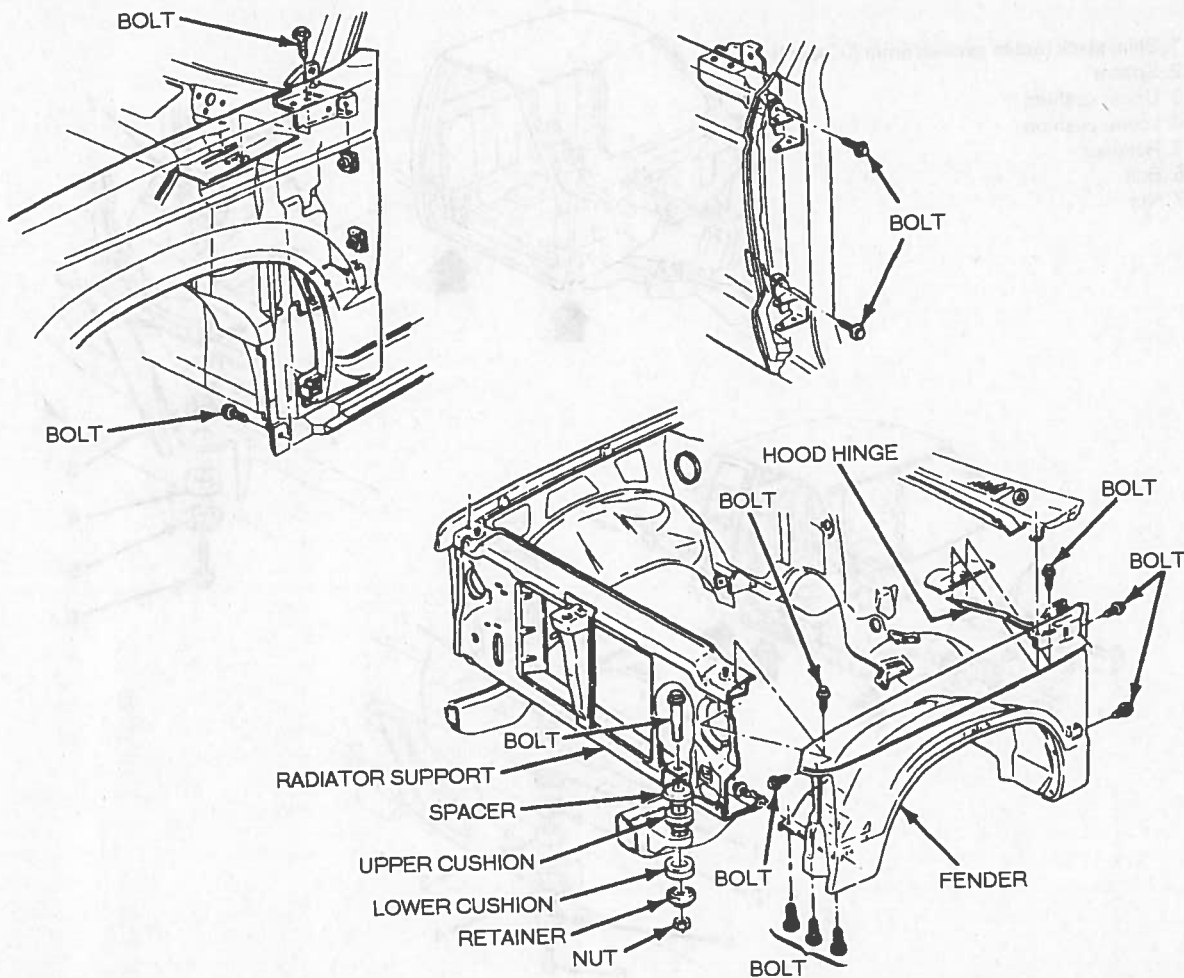
11. Installation is the reverse of the removal.

Cab/Body Mounts

REMOVAL & INSTALLATION

➤ See Figures 29 and 30

Certain procedures covered by this manual (involving the top bellhousing-to-engine bolts) require the cab/body mount bolts to be removed so the body may be raised slightly for access.



85380034

Fig. 28 Common fender and radiator support mounting

It is critical that the body NOT be raised any more than necessary for access or twisting and damage could occur. The body must be properly supported at all times.

If a cab/body mount must be removed completely for replacement, ALL mounts on that side of the vehicle MUST be unbolted in order to prevent damage. Again, the body must be suitably supported and multiple points (near each of the mounts) in order to prevent damage.

➡Shims are available in various sized to help level the cab, but the stack should NEVER exceed 0.24 in. (6.0mm).

1. Raise and support the vehicle safely placing jackstands under the body at each of the mounts on that side. Protect the body from the jackstands using wooden blocks. The blocks will help distribute the vehicle's weight on a larger area than the lips of the jackstand. Place at least on jackstand under the frame temporarily for safety.

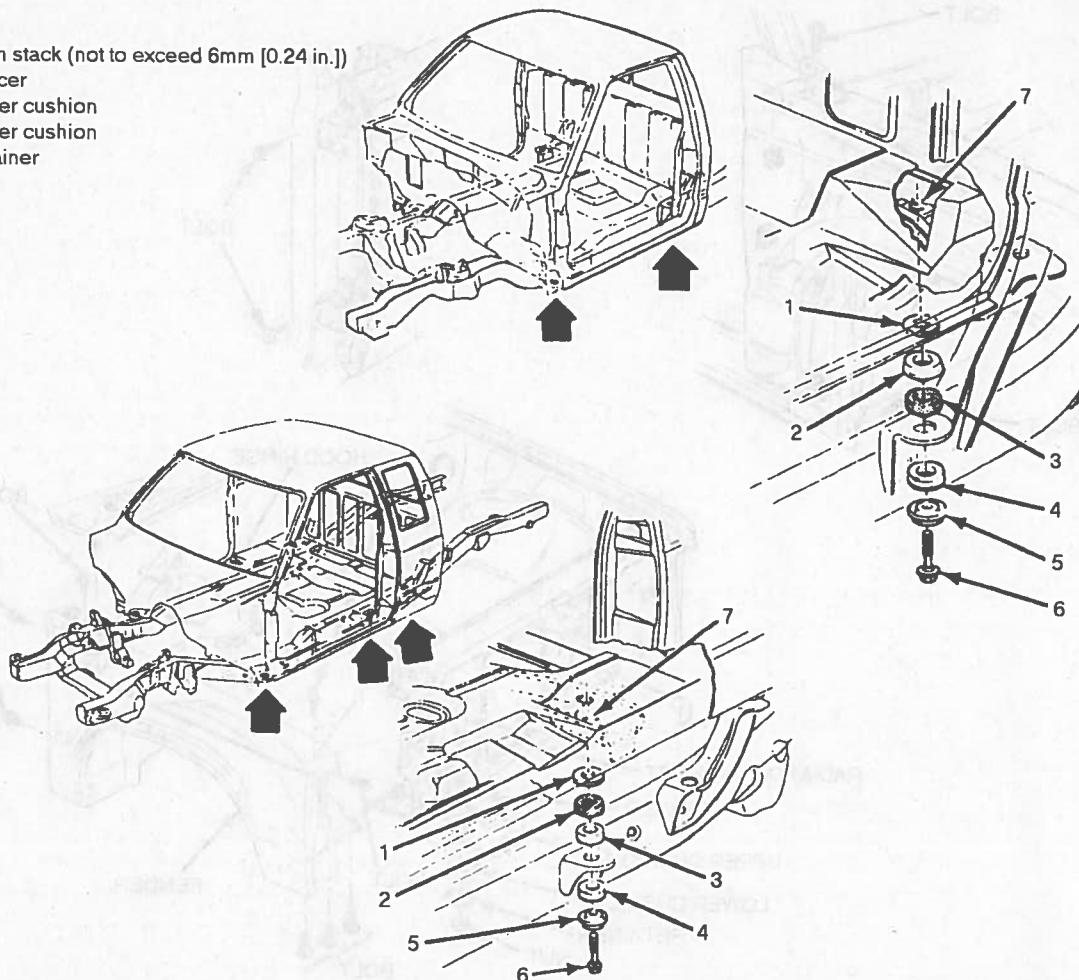
2. Loosen and remove the mount bolts on that side of the vehicle. If possible, remove the retainer and lower cushion as well.



85380035

Fig. 29 Some procedure require the left cab/body mounts to be unbolted

1. Shim stack (not to exceed 6mm [0.24 in.])
2. Spacer
3. Upper cushion
4. Lower cushion
5. Retainer
6. Bolt
7. Nut



85380036

Fig. 30 Cab/body mount locations

3. Remove the jackstand from the FRAME only, then slowly lower the frame away from the body on that side. Make sure you remain clear of the frame during this (also keep small children and pets away, if you think ethylene glycol anti-freeze is bad for them, a frame is even worse).

DO NOT lower the frame away from the body ANY MORE than is absolutely necessary.

4. Once the frame is lowered sufficiently, support it at this new height using a jackstand for safety.

5. Remove the upper cushion, spacer and shims, as applicable.

6. Installation is the reverse of removal. Remember, at NO point should you work under the vehicle unless both the body and frame are supported using jackstands. The floor jack IS

NOT sufficient to assure safety, even for short periods of time. Tighten the mount bolts to 52-54 ft. lbs. (70-73 Nm).

Spare Tire Carrier

REPLACEMENT

1. Raise and support the vehicle safely using jackstands for access.
2. Lower the spare tire and remove it.
3. Remove the cotter pin and bolts attaching the spare tire hoist to the frame.
4. Remove the spare tire hoist.
5. Installation is the reverse of removal. Tighten bolts to 11 ft. lbs. (15 Nm).

INTERIOR

Door Trim Panel

REMOVAL & INSTALLATION

♦ See Figures 31 and 32

➡The following procedure requires the use of the Trim Pad Removal tool No. J-24595 (early models), J-21104 (late models) or equivalent, and the Window Regulator Clip Removal tool No. J-9886-01 or equivalent.

1. Remove the door pillar/garnish molding.

2. Unless equipped with power windows, use a window regulator clip removal tool such as J-9886-01 or equivalent, to remove the window regulator clip and separate the handle from the door.

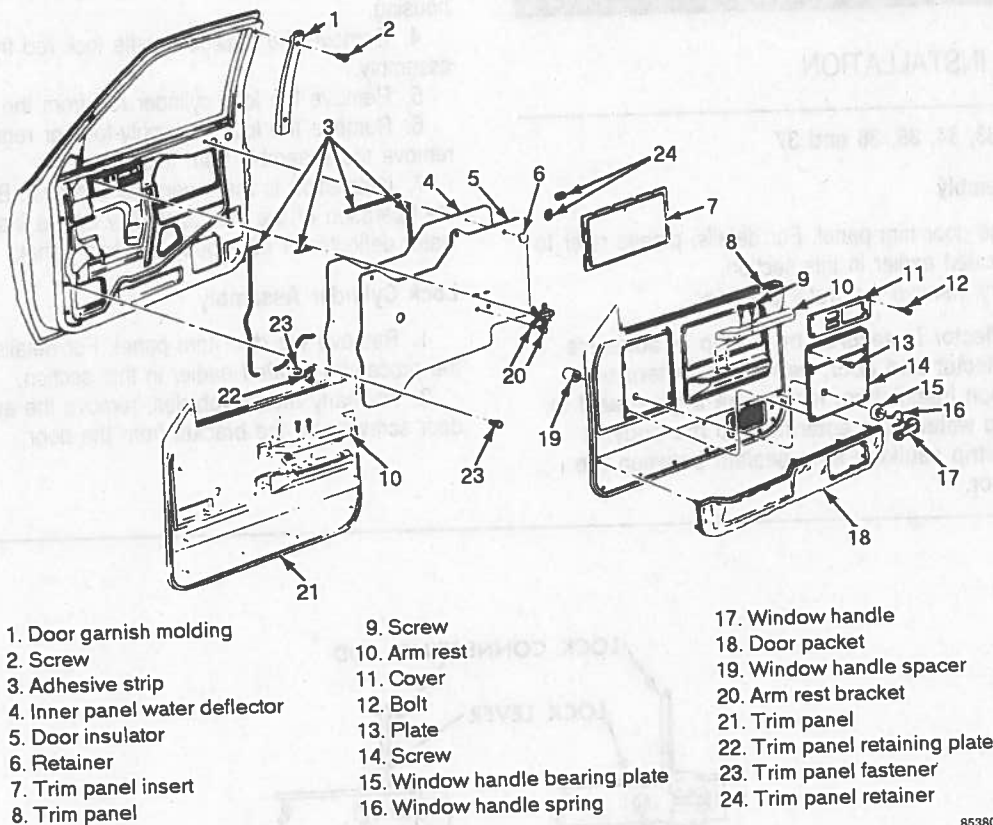
3. If necessary, remove the door handle bezel-to-door screws and the bezel.

4. Remove the armrest-to-door screws and the armrest.

5. If equipped with power windows, remove/disengage the switch.

6. Using a suitable trim pad removal tool, remove the nylon fasteners from their seats.

7. Installation is the reverse of removal.



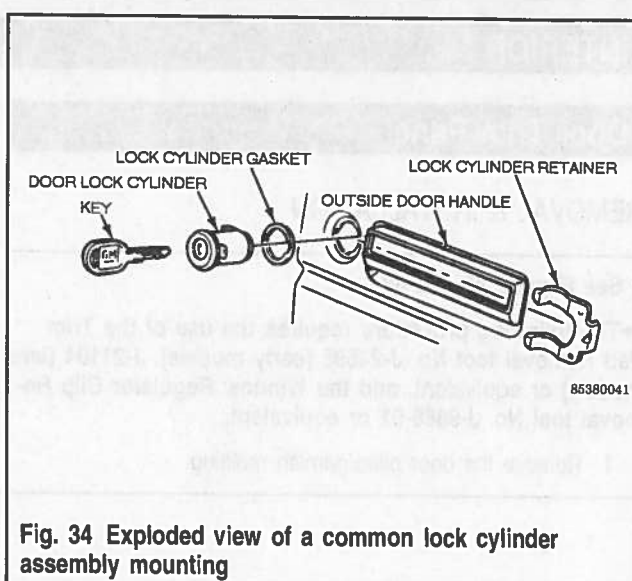
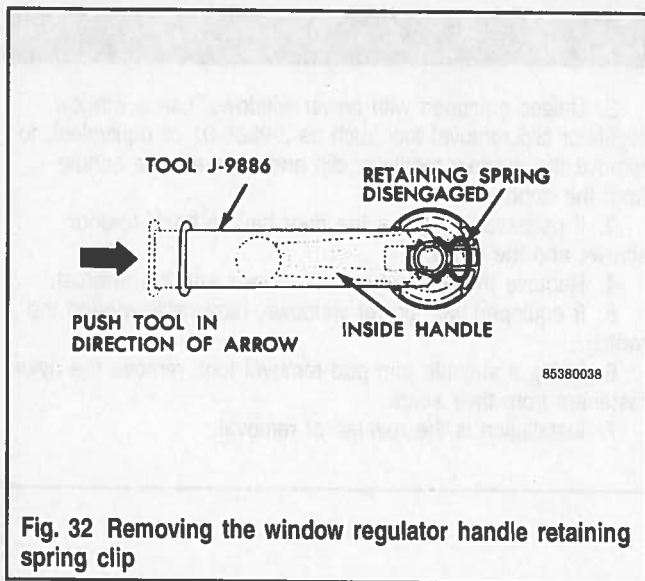
- 1. Door garnish molding
- 2. Screw
- 3. Adhesive strip
- 4. Inner panel water deflector
- 5. Door insulator
- 6. Retainer
- 7. Trim panel insert
- 8. Trim panel

- 9. Screw
- 10. Arm rest
- 11. Cover
- 12. Bolt
- 13. Plate
- 14. Screw
- 15. Window handle bearing plate
- 16. Window handle spring

- 17. Window handle
- 18. Door packet
- 19. Window handle spacer
- 20. Arm rest bracket
- 21. Trim panel
- 22. Trim panel retaining plate
- 23. Trim panel fastener
- 24. Trim panel retainer

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Fig. 31 Exploded view of the door trim panel and related components — early model shown (late model similar)



Door Locks

REMOVAL & INSTALLATION

♦ See Figures 33, 34, 35, 36 and 37

Door Lock Assembly

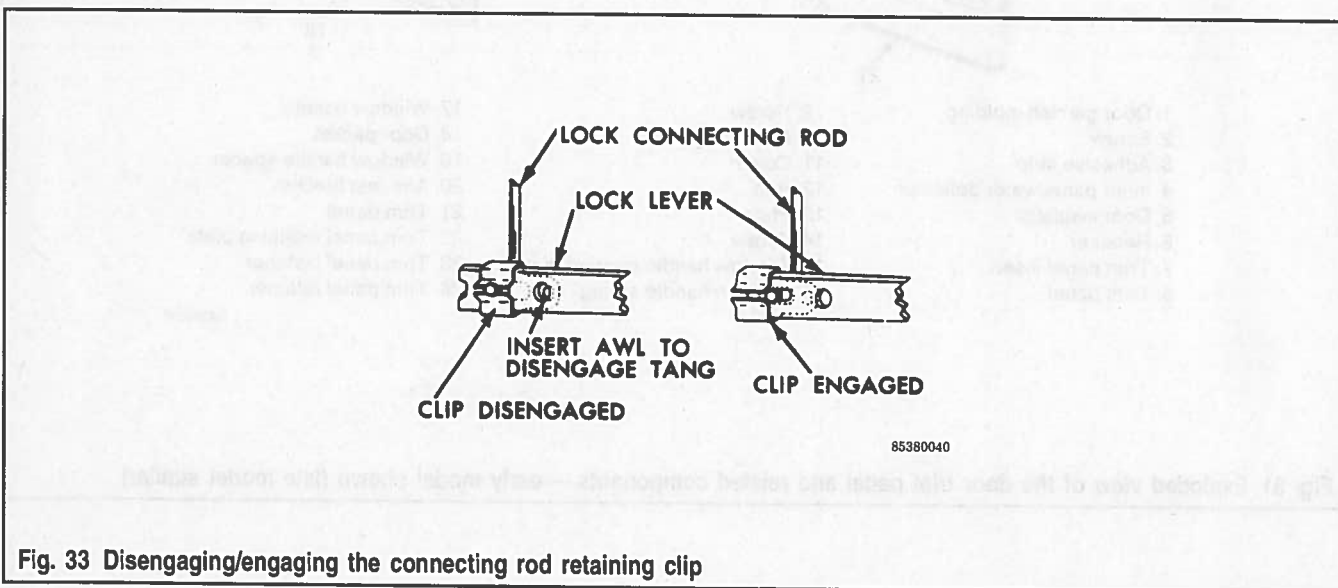
1. Remove the door trim panel. For details, please refer to the procedure located earlier in this section.
2. If necessary, remove the water deflector.

➡ The water deflector is secured by a strip of adhesive between the deflector and door, as well as waterproof sealing tape. Upon installation, make sure a good seal is achieved to keep water from entering into the body. If necessary, use strip caulking as a sealant between the deflector and door.

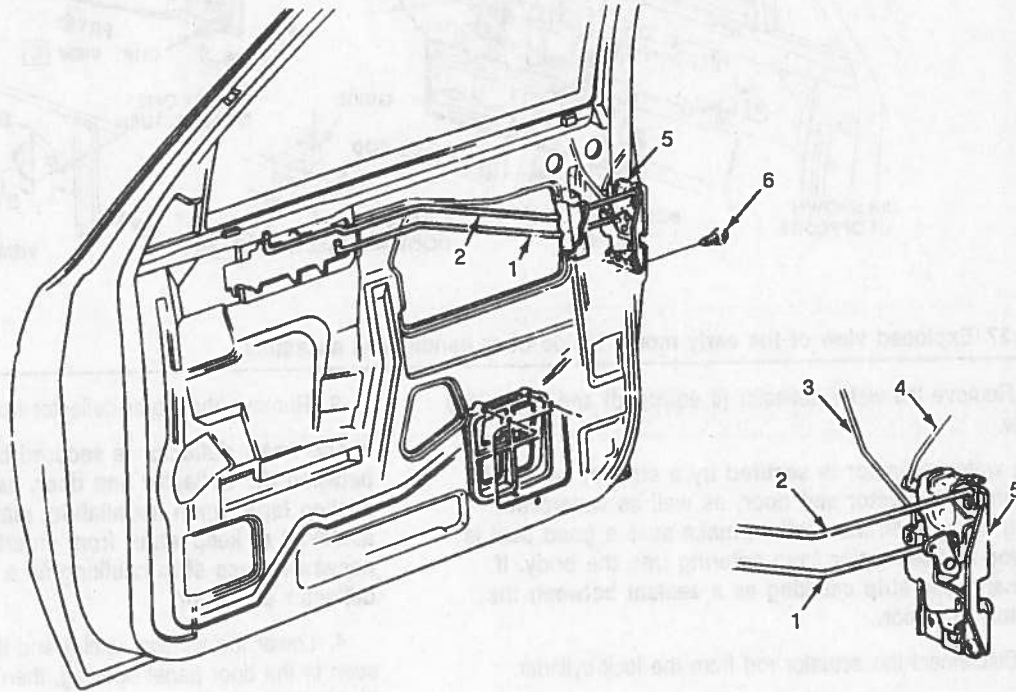
3. Remove the lock rods from the inner door handle housing.
4. Remove the outside handle lock rod from the lock assembly.
5. Remove the lock cylinder rod from the lock cylinder.
6. Remove the lock assembly-to-door retaining screws, then remove the assembly from the door.
7. Installation is the reverse of removal. Be sure to check the operation of the lock assembly before installing the door water deflector (if equipped) and trim panel.

Lock Cylinder Assembly

1. Remove the door trim panel. For details, please refer to the procedure located earlier in this section.
2. For early model vehicles, remove the armrest bracket-to-door screws and the bracket from the door.

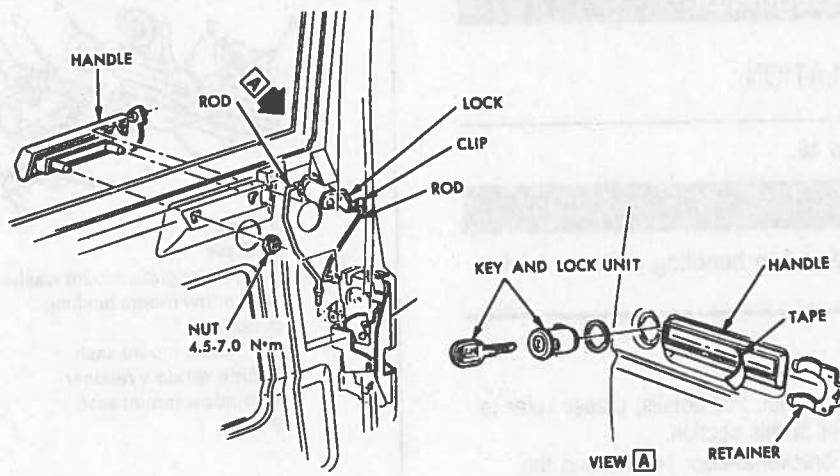


1. Door handle rod
2. Lock handle rod
3. Outside handle rod
4. Lock cylinder rod
5. Lock mechanism
6. Screw



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Fig. 35 View of a common door lock assembly and components



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Fig. 36 Exploded view of the early model outside door handle/lock assembly

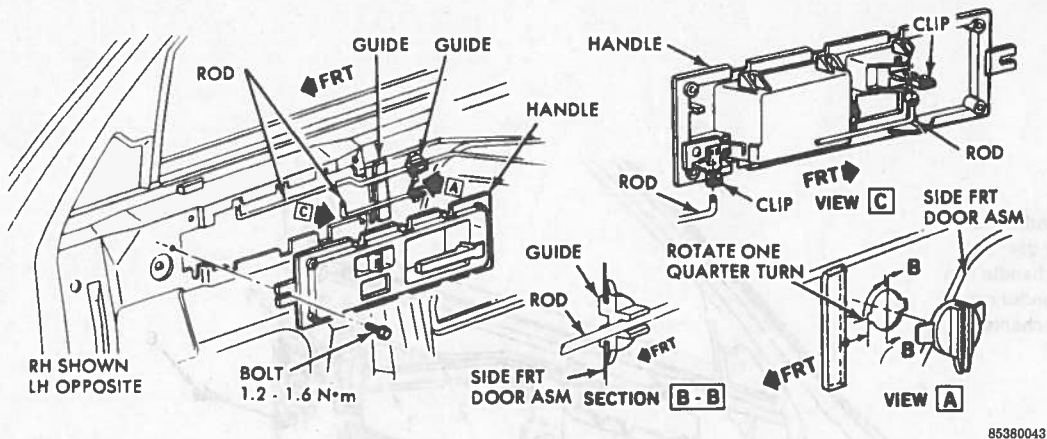


Fig. 37 Exploded view of the early model inside door handle/lock assembly

3. Remove the water deflector (if equipped) and roll up the window.

➔The water deflector is secured by a strip of adhesive between the deflector and door, as well as waterproof sealing tape. Upon installation, make sure a good seal is achieved to keep water from entering into the body. If necessary, use strip caulking as a sealant between the deflector and door.

4. Disconnect the actuator rod from the lock cylinder.

➔On some late model vehicles, it may be easier to remove the lock cylinder retainer, then disconnect the linkage.

5. Remove the lock cylinder-to-door retainer, then remove the lock cylinder and seal from the door.

6. Installation is the reverse of removal. Check the operation of the lock cylinder before installing the water deflector (if equipped) and the door trim panel.

3. Remove the water deflector from the door.

➔The water deflector is secured by a strip of adhesive between the deflector and door, as well as waterproof sealing tape. Upon installation, make sure a good seal is achieved to keep water from entering into the body. If necessary, use strip caulking as a sealant between the deflector and door.

4. Lower the window until it and the sash channel can be seen in the door panel opening, then remove the sash assembly-to-window bolts.

5. Remove the sash assembly and the window from the door.

➔On some late model vehicles it may be necessary to remove the sash assembly, then cut the clips from the glass in order to remove the glass from the door. If this is done, new clips must be installed on the glass before it is lowered into the door and rotated into the run channel.

Door Glass and Regulator

REMOVAL & INSTALLATION

♦ See Figures 38, 39 and 40

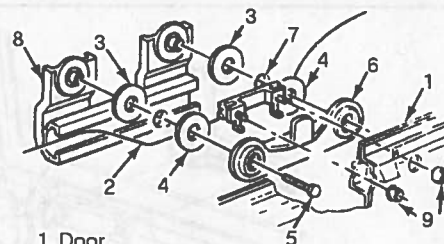
***CAUTION

Always wear heavy gloves when handling glass to minimize the risk of injury.

Door Glass

1. Remove the door trim panel. For details, please refer to the procedure located earlier in this section.

2. Remove the armrest bracket-to-door screws and the bracket.



1. Door
2. Glass
3. Window glass mount washer
4. Window mount bushing
5. Bolt
6. Window mount sash
7. Side window retainer
8. Window mount sash
9. Nut

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Fig. 38 Window sash components

6. Installation is the reverse of removal. Check for proper window operation before installing the water deflector and trim panel.

Door Regulator

1. Remove the door trim panel. For details, please refer to the procedure earlier in this section.
2. Remove the armrest bracket-to-door screws and the bracket.
3. Remove the water deflector from the door.

➡The water deflector is secured by a strip of adhesive between the deflector and door, as well as waterproof sealing tape. Upon installation, make sure a good seal is achieved to keep water from entering into the body. If necessary, use strip caulking as a sealant between the deflector and door.

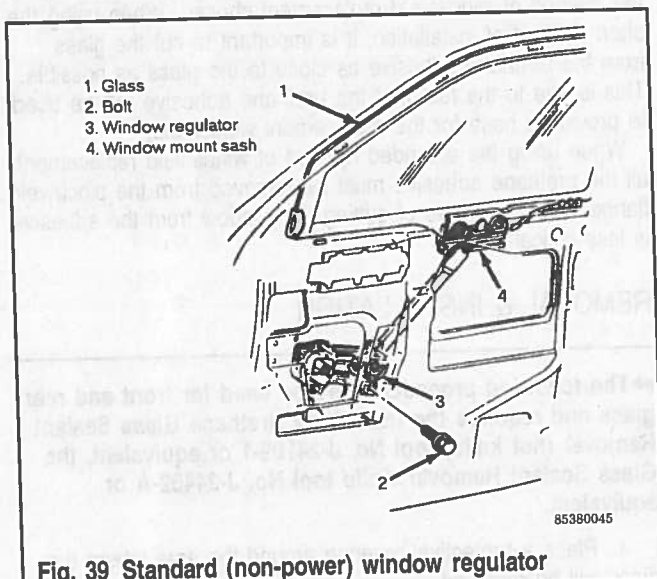


Fig. 39 Standard (non-power) window regulator

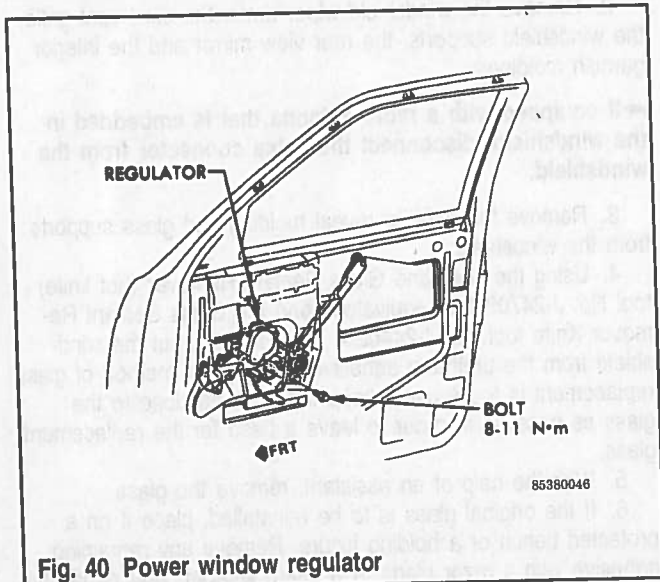


Fig. 40 Power window regulator

4. Raise the window to the Full Up position. Using cloth backed tape, securely tape the glass to the door frame.
5. Remove the regulator-to-door bolts or rivets (as applicable) and separate the regulator lift arm roller from the window sash, then remove the regulator from the door.
6. Installation is the reverse of removal. Use new rivets (when applicable) unless the service kit contains replacement bolts. Be sure to check for proper regulator operation before installing the water deflector and trim panel.

Electric Window Motor

REMOVAL & INSTALLATION

1. Remove the door trim panel. For details, please refer to the procedure earlier in this section.
2. Disconnect the negative battery cable.
3. Remove the armrest bracket-to-door screws and the bracket.
4. Remove the water deflector from the door.

➡The water deflector is secured by a strip of adhesive between the deflector and door, as well as waterproof sealing tape. Upon installation, make sure a good seal is achieved to keep water from entering into the body. If necessary, use strip caulking as a sealant between the deflector and door.

5. Raise the window to the Full Up position. Using cloth backed tape, tape the glass to the door frame.
6. Disengage the electrical wiring connector from the window regulator motor.
7. Separate the regulator lift arm roller from the window sash.
8. To remove the window regulator motor from the door:
 - a. Drill a hole through the regulator sector gear and backplate, then install a bolt/nut to lock the sector gear in position.

⚠CAUTION

The sector gear **MUST** be locked into position. The regulator lift arm is under tension from the counterbalance spring and could cause personal injury if the sector gear is not locked before the motor is disconnected.

- b. Using a $\frac{3}{16}$ in. (5mm) drill bit, drill out the motor-to-door rivets.
- c. Remove the motor from the door.

To install:

9. Position the motor to the regulator, then secure using $\frac{3}{16}$ in. (4.8mm) rivets.
10. After the motor is riveted to the door, remove the nut/bolt from the sector gear.
11. Install the regulator lift arm roller to the window mount sash.
12. The balance of installation is the reverse of removal. It is usually wise to check operation of the system before installing the water deflector and trim panel.

Windshield

♦ See Figures 41, 42, 43, 44, 45 and 46

➤ Bonded windshields require special tools and special removal procedures to be performed to ensure the windshield will be removed without being broken. For this reason we recommend that you refer all removal and installation to a qualified technician.

***CAUTION

Always wear heavy gloves and safety glasses when handling glass to reduce the risk of injury.

When replacing a cracked windshield, it is important that the cause of the crack be determined and the condition corrected, before new glass is installed. The cause of the crack may be an obstruction or a high spot somewhere around the flange of

the opening; cracking may not occur until pressure from the high spot or obstruction becomes particularly high due to winds, extremes of temperature or rough terrain.

When a windshield is broken, the glass may have already fallen or been removed from the weatherstrip. Often, however, it is necessary to remove a cracked or otherwise imperfect windshield that is still intact. In this case, it is a good practice to crisscross the glass with strips of masking tape before removing it; this will help hold the glass together and minimize the risk of injury.

If a crack extends to the edge of the glass, mark the point where the crack meets the weather strip (use a piece of chalk to mark the point on the cab, next to the weatherstrip). Later, examine the window flange for a cause of the crack which started at the point marked.

The higher the temperature of the work area, the more pliable the weather strip will be. The more pliable the weather strip, the more easily the windshield can be removed.

There are two methods of windshield removal, depending on the method of windshield replacement chosen. When using the short method of installation, it is important to cut the glass from the urethane adhesive as close to the glass as possible. This is due to the fact that the urethane adhesive will be used to provide a base for the replacement windshield.

When using the extended method of windshield replacement, all the urethane adhesive must be removed from the pinchweld flange so, the process of cutting the window from the adhesive is less critical.

REMOVAL & INSTALLATION

➤ The following procedure may be used for front and rear glass and requires the use of the Urethane Glass Sealant Remover (hot knife) tool No. J-24709-1 or equivalent, the Glass Sealant Remover Knife tool No. J-24402-A or equivalent.

1. Place a protective covering around the area where the glass will be removed.
2. Remove the windshield wiper arms, the cowl vent grille, the windshield supports, the rear view mirror and the interior garnish moldings.

➤ If equipped with a radio antenna that is embedded in the windshield, disconnect the cable connector from the windshield.

3. Remove the exterior reveal molding and glass supports from the windshield.

4. Using the Urethane Glass Sealant Remover (hot knife) tool No. J-24709-1 or equivalent, and the Glass Sealant Remover Knife tool No. J-24402-A or equivalent, cut the windshield from the urethane adhesive. If the short method of glass replacement is to be used, keep the knife as close to the glass as possible in order to leave a base for the replacement glass.

5. With the help of an assistant, remove the glass.

6. If the original glass is to be reinstalled, place it on a protected bench or a holding fixture. Remove any remaining adhesive with a razor blade or a sharp scraper. Any remaining

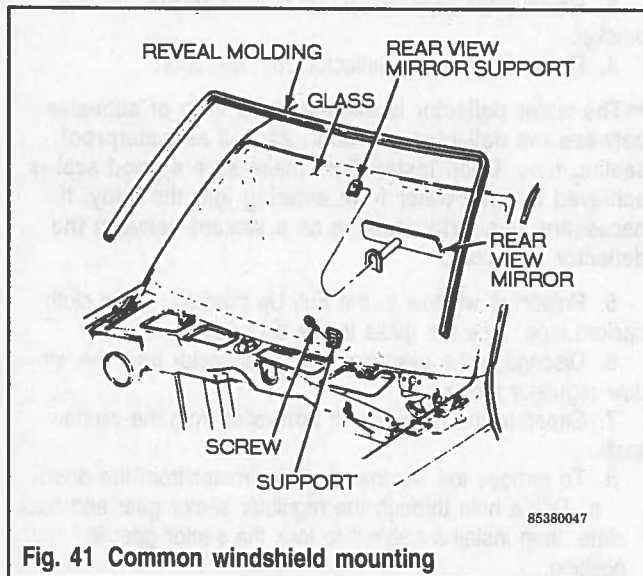


Fig. 41 Common windshield mounting

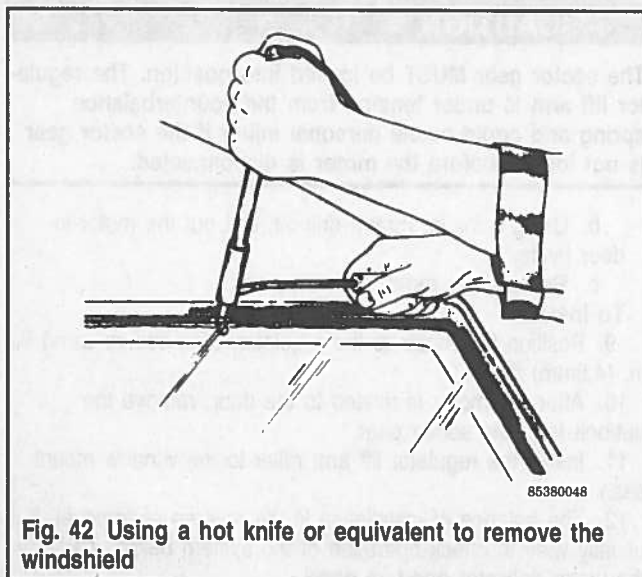


Fig. 42 Using a hot knife or equivalent to remove the windshield

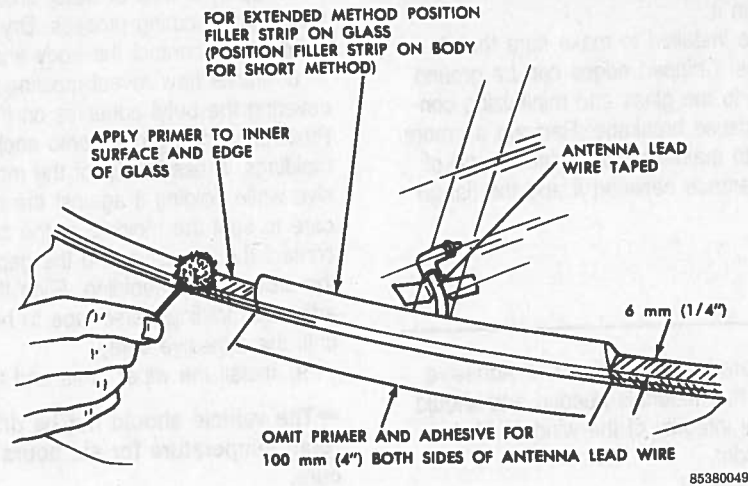


Fig. 43 Applying primer to the windshield

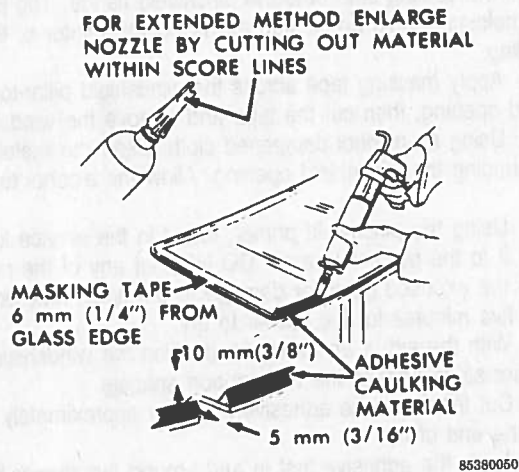


Fig. 44 Applying sealant to the windshield

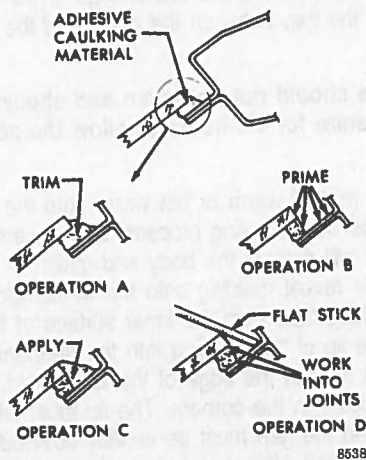


Fig. 45 Trimming sealant to accept the reveal trim molding

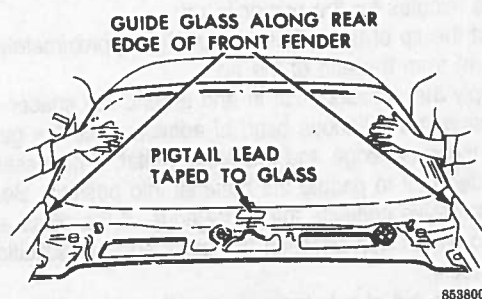


Fig. 46 Installing the glass into the frame

traces of adhesive material can be removed with denatured alcohol or lacquer thinner.

When cleaning the windshield glass, avoid contacting the edge of the plastic laminate material (on the edge of the glass) with a volatile cleaner. Contact may cause discoloration and deterioration of the plastic laminate. DO NOT use a petroleum based solvent such as gasoline or kerosene; the presence of oil will prevent the adhesion of new material.

INSPECTION

Inspection of the windshield opening, the weather strip and the glass may reveal the cause of a broken windshield; this can help prevent future breakage. If there is no apparent cause of breakage, the weatherstrip should be removed from the flange and the flange inspected. Look for high weld or solder spots, hardened spot welds sealer, or any other ob-

struction or irregularity in the flange. Check the weatherstrip for irregularities or obstructions in it.

Check the windshield to be installed to make sure that it does not have chipped edges. Chipped edges can be ground off, restoring a smooth edge to the glass and minimizing concentrations of pressure that cause breakage. Remove no more than necessary, in an effort to maintain the original shape of the glass and the proper clearance between it and the flange of the opening.

INSTALLATION

To replace a urethane adhered windshield, a GM Adhesive Service Kit contains some of the materials needed and should be used to ensure the original integrity of the windshield design. Materials in this kit include:

1. One tube of adhesive material.
2. One dispensing nozzle.
3. Steel music wire.
4. Rubber cleaner.
5. Rubber primer.
6. Pinchweld primer.
7. Blackout primer.
8. Filler strip (for use on windshield installations of vehicles equipped with an embedded windshield antenna).

9. Primer applicators.

Other materials required for windshield installation which are not included in the service kit, are:

10. GM rubber lubricant No. 1051717.
11. Alcohol for cleaning the edge of the glass.
12. Adhesive dispensing gun No. J-24811 or equivalent.
13. A commercial type razor knife.
14. Two rubber support spacers.

Short Method

1. Apply masking across the windshield pillar-to-windshield opening, then cut the tape and remove the windshield.
2. Using an alcohol dampened cloth, clean the metal flange surrounding the windshield opening. Allow the alcohol to air dry.
3. Using the pinchweld primer found in the service kit, apply it to the pinchweld area. DO NOT let any of the primer touch the exposed paint or damage to the finish may occur; allow five minutes for the primer to dry.
4. Cut the tip of the adhesive cartridge approximately $\frac{3}{16}$ inch (5mm) from the end of the tip.
5. Apply the adhesive first in and around the spacer blocks. Apply a smooth continuous bead of adhesive into the gap between the glass edge and the sheet metal. If necessary use a flat bladed tool to paddle the material into position. Be sure that the adhesive contacts the entire edge of the glass and extends to fill the gap between the glass and the solidified urethane base.
6. With the aid of a helper, position the windshield on the filler strips against the two support spacers.

➡The vehicle should not be driven and should remain at room temperature for six hours to allow the adhesive to cure.

7. Spray a mist of water onto the urethane. Water will assist in the curing process. Dry the area where the reveal molding will contact the body and glass.

8. Install new reveal moldings. Remove the protective tape covering the butyl adhesive on the underside of the molding. Push the molding caps onto each end of one of the reveal moldings. Press the lip of the molding into the urethane adhesive while holding it against the edge of the windshield. Take care to seat the molding in the corners. The lip must fully contact the adhesive and the gap must be entirely covered by the crown of the molding. Slide the molding caps onto the adjacent moldings. Use tape to hold the molding in position until the adhesive cures.

9. Install the wiper arms and the interior garnish moldings.

➡The vehicle should not be driven and should remain at room temperature for six hours to allow the adhesive to cure.

Extended Method

1. Using the GM Strip Filler No. 20146247 or equivalent, install the sealing strip onto the pinchweld flange. The joint of the molding should be located at the bottom center of the molding.
2. Apply masking tape across the windshield pillar-to-windshield opening, then cut the tape and remove the windshield.
3. Using an alcohol dampened cloth, clean the metal flange surrounding the windshield opening. Allow the alcohol to air dry.
4. Using the pinchweld primer, found in the service kit, apply it to the pinchweld area. DO NOT let any of the primer touch the exposed paint for damage to the finish may occur; allow five minutes for the primer to dry.
5. With the aid of an assistant, position the windshield on the filler strips against the two support spacers.
6. Cut the tip of the adhesive cartridge approximately $\frac{3}{16}$ in. from the end of the tip.
7. Apply the adhesive first in and around the spacer blocks. Apply a smooth continuous bead of adhesive into the gap between the glass edge and the sheet metal. If necessary, use a flat bladed tool to paddle the material into position. Be sure that the adhesive contacts the entire edge of the glass and extends to fill the gap between the glass and the primed sheet metal.

➡The vehicle should not be driven and should remain at room temperature for six hours to allow the adhesive to cure.

8. Spray a mist of warm or hot water onto the urethane. Water will assist in the curing process. Dry the area where the reveal molding will contact the body and glass.

9. Install the reveal molding onto the windshield and remove the masking tape from the inner surface of the glass.

10. Press the lip of the molding into the urethane adhesive while holding it against the edge of the windshield. Take care to seat the molding in the corners. The lip must fully contact the adhesive and the gap must be entirely covered by the crown of the molding. Use tape to hold the molding in position until the adhesive cures.

11. Install the wiper arms and the interior garnish moldings.

Side Window — Extended Cab

REMOVAL & INSTALLATION

Stationary

➡ The following procedure requires the use of a urethane glass sealant remover (hot knife) such as No. J-24709-1, and a glass sealant remover knife such as No. J-24402-A, or equivalents.

1. Remove the upper quarter trim molding.
2. Remove the retaining clips.

➡ If the glass is cracked, it should be crisscrossed with masking tape to reduce the risk of damage to the vehicle. If a crack extends to the edge of the glass, mark the cab with a piece of chalk at the point where the crack meets the cab; this will aid the inspection later.

3. Working from inside the vehicle, use a urethane glass sealant remover (hot knife) or the glass sealant remover knife to separate the window glass and molding.
4. Remove the molding and the glass from the window frame.
5. Using a scraper or a chisel, remove the adhesive from the pinchweld flange; be sure to remove all of the mounds or loose adhesive.
6. Using alcohol and a clean cloth, clean the pinchweld flange. Allow the alcohol to air dry.
7. Using the pinchweld primer, found in the service kit, apply it to the pinchweld area. DO NOT let any of the primer touch the exposed paint for damage to the finish may occur; allow five minutes for the primer to dry.
8. Apply a smooth continuous bead of adhesive around the molding edge. Be sure that the adhesive contacts the entire edge of the molding and extends to fill the gap between the glass and the primed sheet metal.
9. Using hand pressure, press the glass/molding assembly onto the pinchweld flange. Using retaining clips, secure the glass/molding assembly to the pinchweld.
10. Spray a mist of warm or hot water onto the urethane. Water will assist in the curing process. Dry the area where the reveal molding will contact the body and glass.

Latched

➡ See Figure 47

➡ The following procedure requires the use of a pin punch and a mallet.

1. Using a pin punch and a mallet, drive the pin from the latch assembly.
2. Remove the glass-to-hinge retaining screws and the glass from the vehicle.
3. Installation is the reverse of removal.

Rear Window Glass

REMOVAL & INSTALLATION

➡ See Figure 48

➡ The following procedure requires the use of a 1/4 in. (6mm) cord, a putty knife and an assistant.

1. Using a putty knife, run it between the weatherstrip and the flange on both sides.
2. Position an assistant on the outside of the cab by the window, to catch the window.
3. Using a putty knife, on the inside of the rear window, force the weatherstrip/glass assembly, from the flange.
4. Separate the glass from the weatherstrip.

➡ To ease the weatherstrip installation, heat it with a non-flame source heater; at higher temperatures the weatherstrip is more pliable. DO NOT heat it above 125°F (52°C) or for more than 1 1/2 hours.

To install:

5. Position the rear window glass in the weatherstrip.
6. Using a 1/4 in. (6mm) cord, place it in the weatherstrip groove; the ends should overlap 6 in. (152mm) at the bottom of the window.
7. Using soapy water, lubricate the flange and the weatherstrip.
8. Position an assistant inside the cab, install the weatherstrip/glass assembly and have the assistant pull the cord to seat the weatherstrip on the window flange.
9. Apply a light mist of water to the window to check for leaks. If leak(s) are present, use urethane sealant to remedy the problem(s).

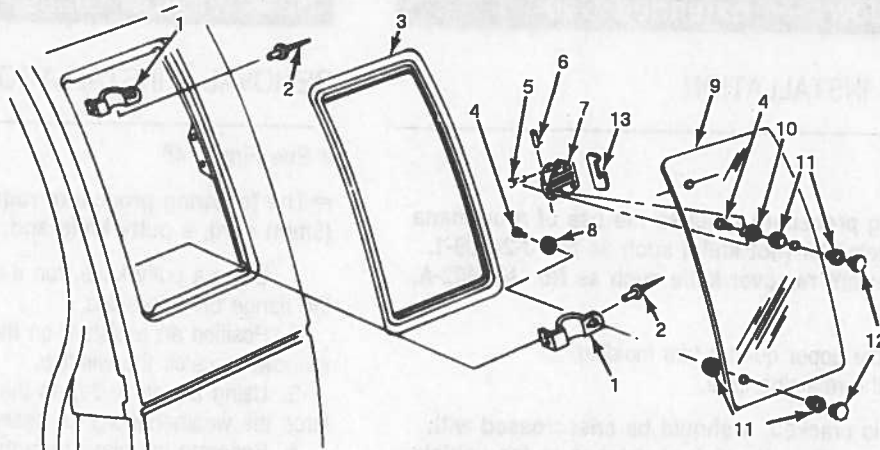
Inside Rear View Mirror

REPLACEMENT

➡ See Figure 49

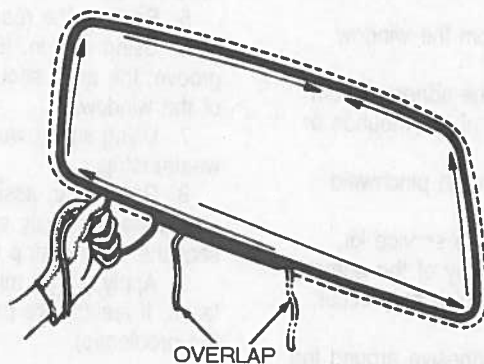
1. Determine the location of the rear view mirror and using a wax pencil, draw a centerline on the outside of the glass from the roof panel to the windshield base.
2. Draw a line intersecting the centerline approximately 23 1/8 in. (587mm) from the base of the glass. The base of the support will be located at the intersection of these lines.
3. Clean the inside glass within 3 in. (76mm) of the intersecting lines. Using a glass cleaning solution rub the area until completely dry. Reclean with a towel saturated with alcohol.
4. Sand the bonding surface of the rear view mirror support with 320 grit sandpaper. Remove all traces of the factory adhesive if reusing the old support. Wipe the mirror support with alcohol and allow to dry.
5. Apply Loctite® Minute Bond Adhesive 312, or equivalent to the mirror support bonding surfaces.
6. Place the bottom of the support at the premarked line. The rounded edge of the support should face upward.

1. Hinge
2. Rivet
3. Seal
4. Bolt
5. Screw
6. Pin
7. Latch
8. Retainer
9. Glass
10. Bearing
11. Bushing
12. Nut
13. Shim



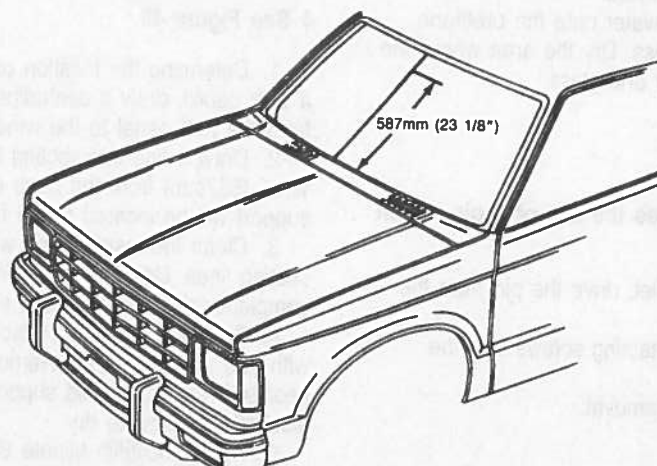
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Fig. 47 Exploded view of a common latched side window mounting — extended cab models



85380055

Fig. 48 Using a cord to install the rear window



85380056

Fig. 49 Locating the mirror support

7. Press the support against the glass for 30-60 seconds with a steady pressure. Allow the adhesive to dry 5 minutes before cleaning.

8. Clean all traces of adhesive and wax from the windshield with alcohol.

Seats

REMOVAL & INSTALLATION

♦ See Figures 50, 51, 52 and 53

Most vehicles covered by this manual are equipped with bench seats. Removal of the bench seat assembly is a relatively simple process. Locate and remove the retainers (usually nuts), then carefully lift the seat from the brackets.

Some vehicles (such as the MFI-Turbo and some other later model trucks) may be equipped with manual or power bucket seats. Removal of a bucket seat is also a relatively simple process, once you find the retainers. On some vehicles you will have to remove the lower trim panels which are used to hide the brackets. Also, power seats will have one or more electrical wiring connectors which must be disengaged before attempting to remove the seat. Once the fasteners are removed and any wiring has been disconnected, lift the bucket seat from the brackets.

Seats Belt System

REMOVAL & INSTALLATION

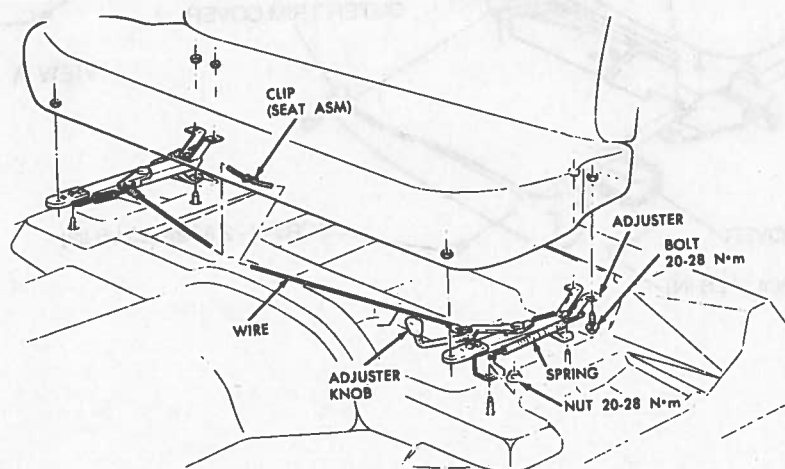
♦ See Figure 54

Front Seat Belt

1. Remove the cover from the door pillar anchor plate.
2. Remove the attaching bolt, anchor plate and washer from the door pillar.
3. Remove the bolt cover from the rear of the retractor assembly.
4. Remove the bolt retaining the retractor to the floor panel and remove the retractor.
5. Remove the buckle assembly from the floor panel.
6. Remove the cap which conceals the buckle assembly bolt and remove the bolt.
7. Remove the seat belt warning wire from the driver's side buckle and remove the buckle from the vehicle.
8. Installation is the reverse of removal. Tighten all fasteners securely.

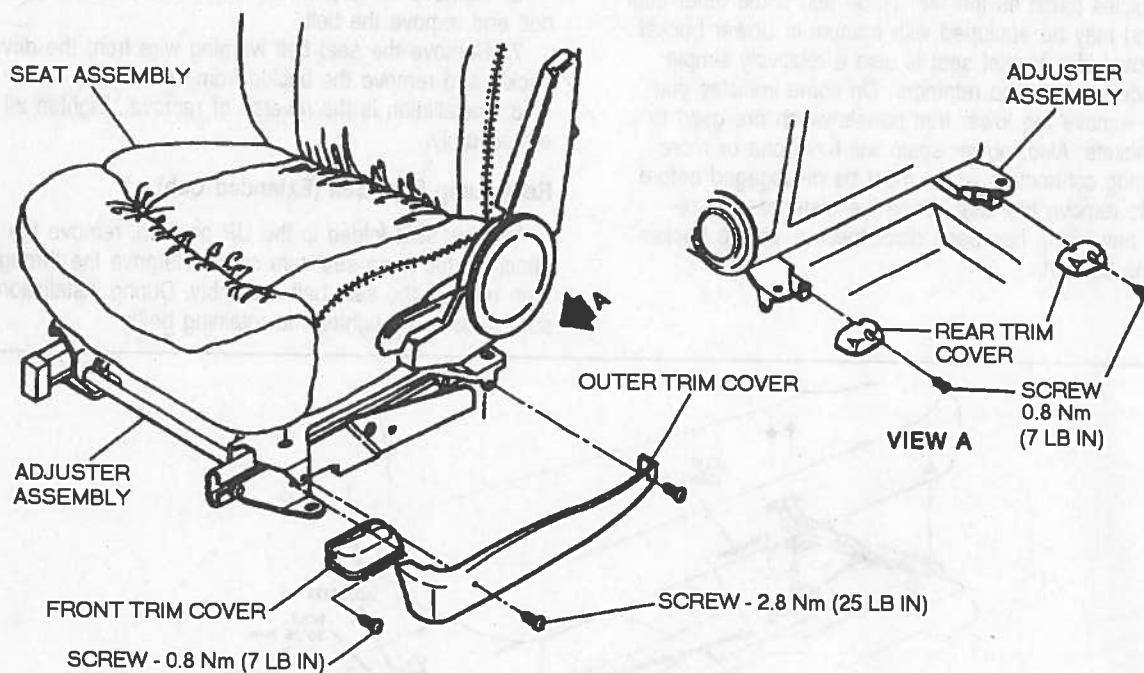
Rear Jump Seat Belt (Extended Cab)

With the seat folded in the UP position, remove the screws attaching the jump seat trim cover. Remove the through-bolt, then remove the seat belt assembly. During installation, be sure to securely tighten the retaining bolts.



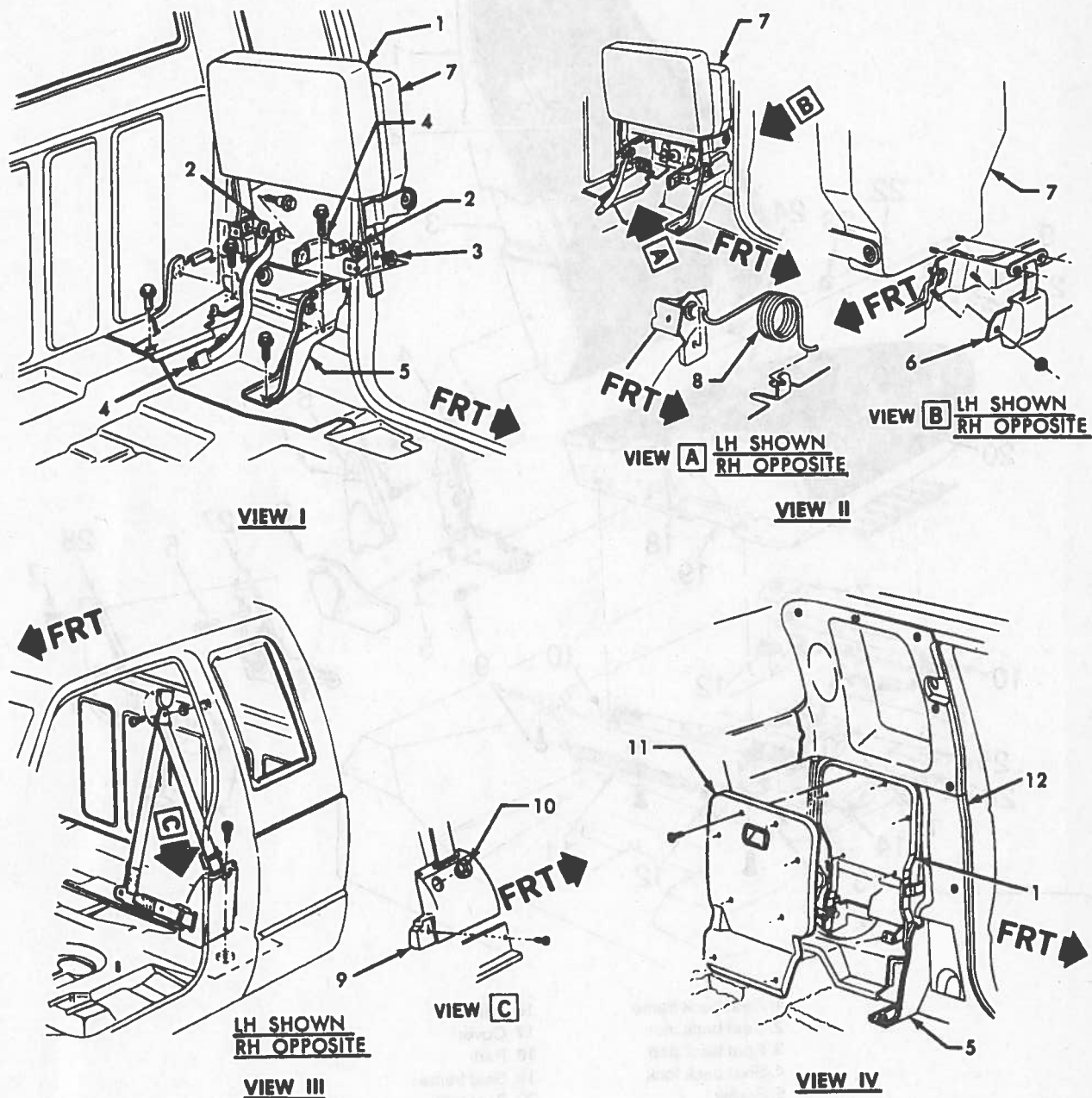
85380057

Fig. 50 Front bench seat and adjuster mounting



85380060

Fig. 51 Bucket seat trim covers

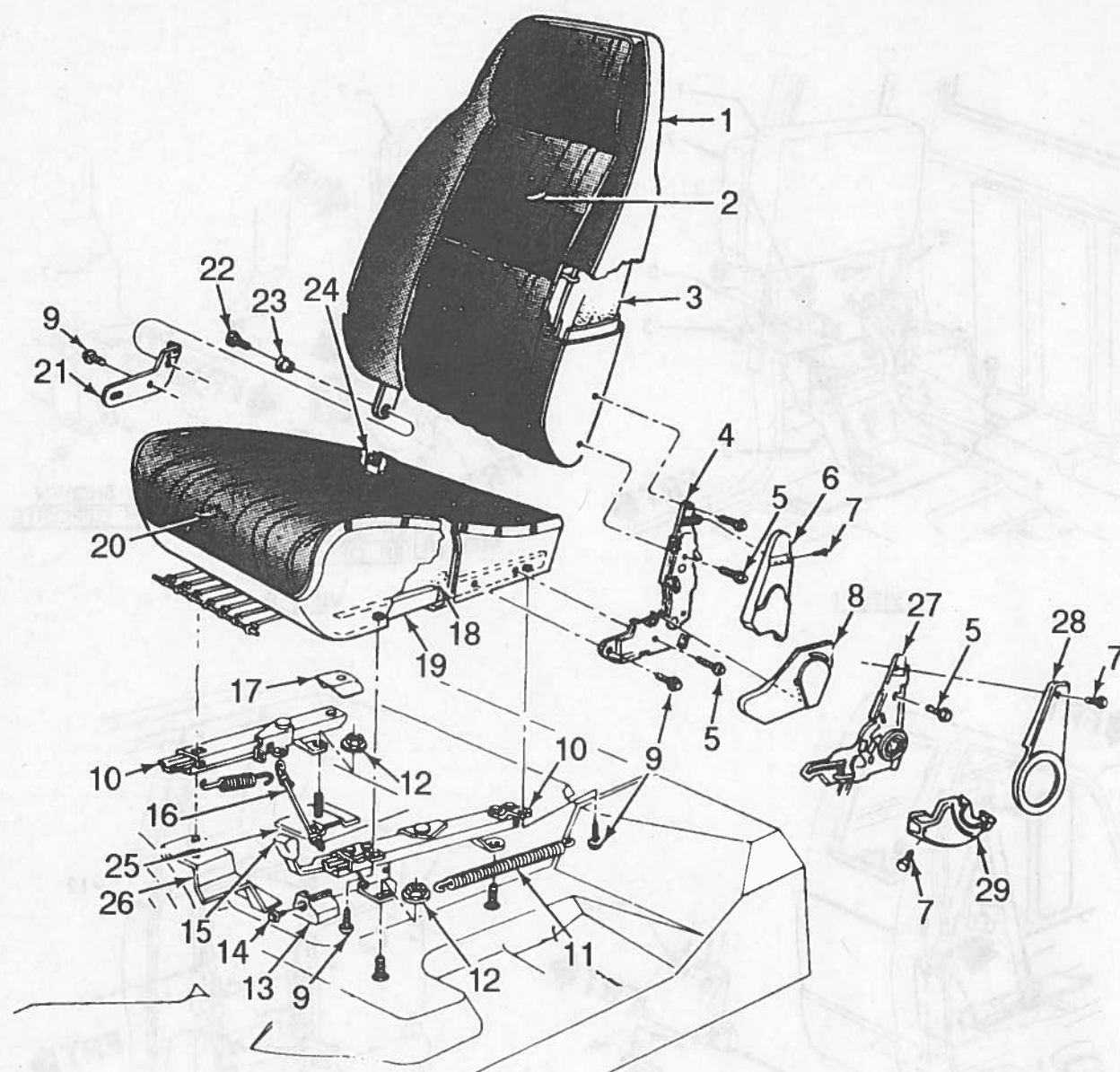


1. Seat cushion assembly
2. Spring washer
3. Pivot bushing
4. Seat lap belt
5. Seat mounting support bracket
6. Seat back lock-assembly

7. Seat back assembly
8. Tensioner spring
9. Front seat belt assembly
10. Plug
11. Seat cushion bottom trim panel
12. Body side lower trim panel

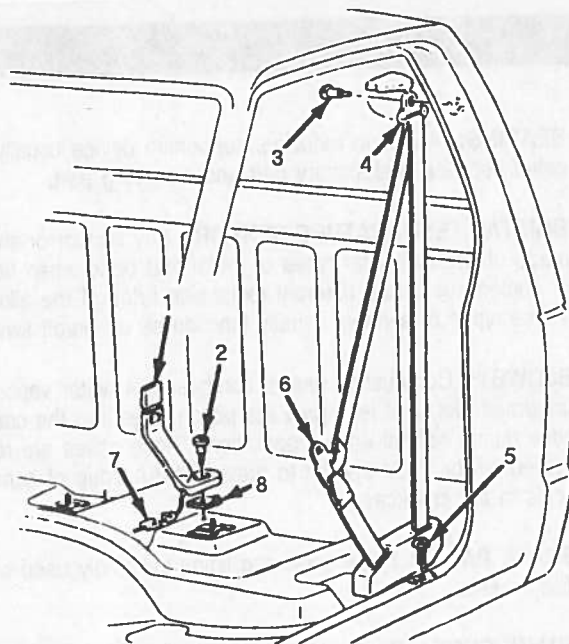
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Fig. 52 Folding jumpseats (extended cab)

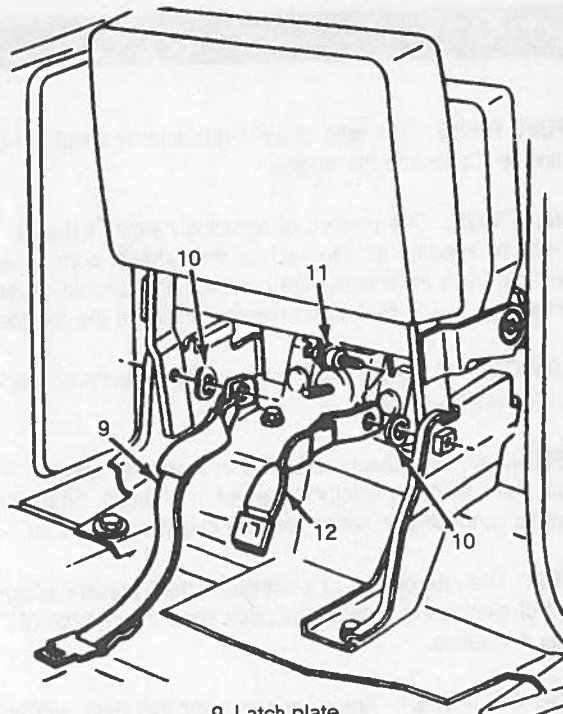


1. Seat back frame
2. Seat back trim
3. Seat back pad
4. Seat back lock
5. Screw
6. Seat back cover
7. Screw
8. Cover
9. Screw
10. Adjuster
11. Spring
12. Nut
13. Cover
14. Screw
15. Knob
16. Wire
17. Cover
18. Pad
19. Seat frame
20. Seat trim
21. Seat back stop
22. Bolt
23. Bushing
24. Nut
25. Bracket
26. Plate
27. Control
28. Cover
29. Cover

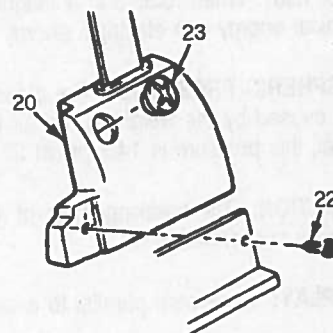
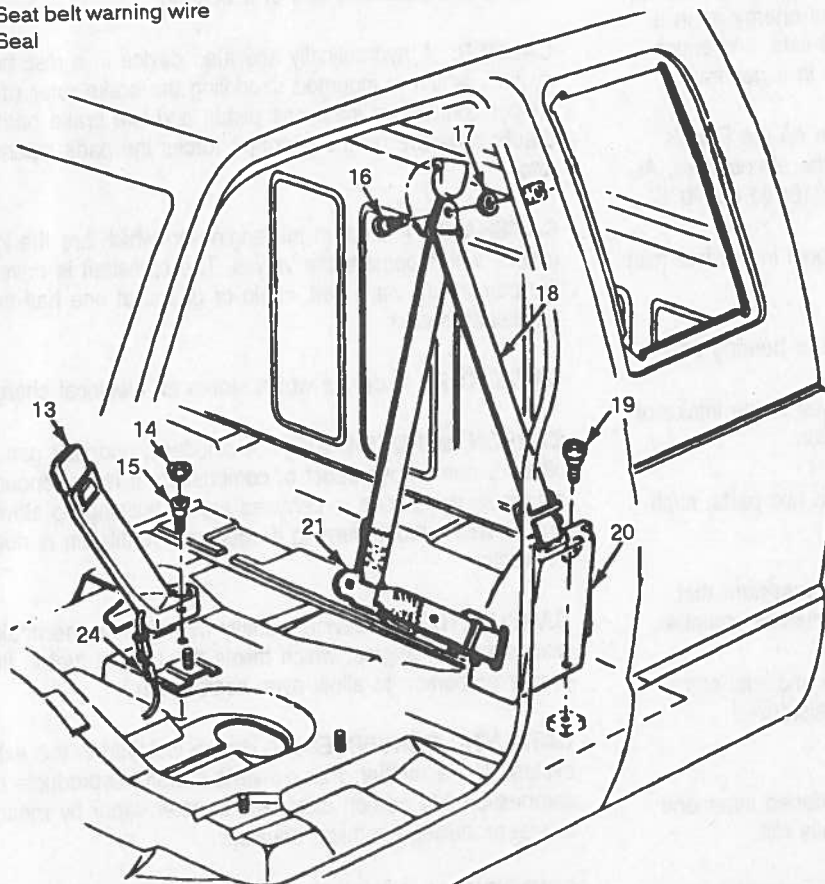
Fig. 53 Manual front bucket seat components



- 1. Buckle
- 2. Bolt
- 3. Bolt
- 4. Anchor plate
- 5. Bolt
- 6. Latch plate
- 7. Seat belt warning wire
- 8. Seal



- 9. Latch plate
- 10. Washer
- 11. Bolt
- 12. Buckle



- 13. Buckle
- 14. Cap
- 15. Bolt
- 16. Bolt
- 17. Washer
- 18. Belt
- 19. Bolt
- 20. Retractor
- 21. Latch plate
- 22. Screw
- 23. Cap
- 24. Seat belt warning wire

Fig. 54 Common seat belt mounting

GLOSSARY

AIR/FUEL RATIO: The ratio of air-to-gasoline by weight in the fuel mixture drawn into the engine.

AIR INJECTION: One method of reducing harmful exhaust emissions by injecting air into each of the exhaust ports of an engine. The fresh air entering the hot exhaust manifold causes any remaining fuel to be burned before it can exit the tailpipe.

ALTERNATOR: A device used for converting mechanical energy into electrical energy.

AMMETER: An instrument, calibrated in amperes, used to measure the flow of an electrical current in a circuit. Ammeters are always connected in series with the circuit being tested.

AMPERE: The rate of flow of electrical current present when one volt of electrical pressure is applied against one ohm of electrical resistance.

ANALOG COMPUTER: Any microprocessor that uses similar (analogous) electrical signals to make its calculations.

ARMATURE: A laminated, soft iron core wrapped by a wire that converts electrical energy to mechanical energy as in a motor or relay. When rotated in a magnetic field, it changes mechanical energy into electrical energy as in a generator.

ATMOSPHERIC PRESSURE: The pressure on the Earth's surface caused by the weight of the air in the atmosphere. At sea level, this pressure is 14.7 psi at 32°F (101 kPa at 0°C).

ATOMIZATION: The breaking down of a liquid into a fine mist that can be suspended in air.

AXIAL PLAY: Movement parallel to a shaft or bearing bore.

BACKFIRE: The sudden combustion of gases in the intake or exhaust system that results in a loud explosion.

BACKLASH: The clearance or play between two parts, such as meshed gears.

BACKPRESSURE: Restrictions in the exhaust system that slow the exit of exhaust gases from the combustion chamber.

BAKELITE: A heat resistant, plastic insulator material commonly used in printed circuit boards and transistorized components.

BALL BEARING: A bearing made up of hardened inner and outer races between which hardened steel balls roll.

BALLAST RESISTOR: A resistor in the primary ignition circuit that lowers voltage after the engine is started to reduce wear on ignition components.

BEARING: A friction reducing, supportive device usually located between a stationary part and a moving part.

BIMETAL TEMPERATURE SENSOR: Any sensor or switch made of two dissimilar types of metal that bend when heated or cooled due to the different expansion rates of the alloys. These types of sensors usually function as an on/off switch.

BLOWBY: Combustion gases, composed of water vapor and unburned fuel, that leak past the piston rings into the crankcase during normal engine operation. These gases are removed by the PCV system to prevent the buildup of harmful acids in the crankcase.

BRAKE PAD: A brake shoe and lining assembly used with disc brakes.

BRAKE SHOE: The backing for the brake lining. The term is, however, usually applied to the assembly of the brake backing and lining.

BUSHING: A liner, usually removable, for a bearing; an anti-friction liner used in place of a bearing.

CALIPER: A hydraulically activated device in a disc brake system, which is mounted straddling the brake rotor (disc). The caliper contains at least one piston and two brake pads. Hydraulic pressure on the piston(s) forces the pads against the rotor.

CAMSHAFT: A shaft in the engine on which are the lobes (cams) which operate the valves. The camshaft is driven by the crankshaft, via a belt, chain or gears, at one half the crankshaft speed.

CAPACITOR: A device which stores an electrical charge.

CARBON MONOXIDE (CO): A colorless, odorless gas given off as a normal byproduct of combustion. It is poisonous and extremely dangerous in confined areas, building up slowly to toxic levels without warning if adequate ventilation is not available.

CARBURETOR: A device, usually mounted on the intake manifold of an engine, which mixes the air and fuel in the proper proportion to allow even combustion.

CATALYTIC CONVERTER: A device installed in the exhaust system, like a muffler, that converts harmful byproducts of combustion into carbon dioxide and water vapor by means of a heat-producing chemical reaction.

CENTRIFUGAL ADVANCE: A mechanical method of advancing the spark timing by using flyweights in the distributor that react to centrifugal force generated by the distributor shaft rotation.